

المؤتمر الدولي الثاني للعلوم والتنمية

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تقديم

انطلاقاً من حرص كلية العلوم في الجامعة الإسلامية على مواكبة التطورات المتلاحقة في قضايا البحث العلمي والتنمية، وتحديد ومعالجة الإشكاليات التي تواجهها، دأبت الكلية على عقد الأيام الدراسية لأقسامها المختلفة، كما عقدت مؤتمرها الدولي الأول عام 2005.

واليوم تعقد الكلية المؤتمر الدولي الثاني للعلوم والتنمية

ويأتي هذا المؤتمر لتحقيق مجموعة من الأهداف تتمثل بما يلي:
جمع العلماء والباحثين من داخل فلسطين وخارجها، - ومن خلال الاستعانة بوسائل الاتصال الحديثة - لعرض نتائج أبحاثهم ومناقشتها، مما يتيح التعرف على هذه النتائج وتطويرها والاستفادة منها. وهذا يؤدي إلى اتساع دائرة المعرفة ويدفع عجلة البحوث العلمية الموجهة لخدمة الفرد والمجتمع إلى الأمام.
ونطمح أن يؤدي هذا التجمع إلى تشجيع الأساتذة والباحثين على التعاون معاً في مشاريع مشتركة مستقبلية، حتى تزداد كفاءة ونوعية البحوث الموجهة للتغلب على المشكلات التي تواجهها الصناعة والزراعة والبيئة في المجتمع الفلسطيني.
كذلك يمثل هذا المؤتمر فرصة لطلبة الدراسات العليا للتعرف على الأبحاث في مجالات تخصصهم، ومنهجية البحث العلمي، وطريقة عرض البحوث ومناقشتها والاستفادة منها، وهذا قد يساعدهم في تحديد خطتهم البحثي المستقبلية، واختيار مواضيع لرسائلهم الجامعية.
ومع وجود عدد كبير من الباحثين من الأساتذة المختصين في كل مجالات العلوم من مختلف الجامعات والمؤسسات البحثية المحلية والعربية والدولية نأمل أن نستمكن من تحقيق الأهداف السابقة، وأن يمثل هذا المؤتمر نقطة انطلاق للتقدم العلمي في فلسطين الغالية.

والله ولي التوفيق

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

الأحياء

Biology

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**PEDICULUS CAPITIS ,INFESTATION ACCORDING TO SEX AND
SOCIAL FACTORS IN GAZA GOVERNORATES-PALESTINE.**

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Abstract

Human head lice (*Pediculus capitis*) infest people worldwide and are most prevalent in children, the aim of this study was to determine the socioeconomic status of the family and hygienic practices in the home on prevalence of head lice infestation in children. The prevalence was investigated among 192 houses in Gaza city containing 603 children. The hair was examined for head louse infestation. A total of 195 children were infested with head lice. Males had lower infestation than females. Children aged 4-9 years were the most frequently affected, there was a significant relationship between head louse infestation, family size, number of rooms in the homes, family income, frequency of shampooing and combing the hair and frequency of examination the hair for lice.

It was found that 26.7% of infested children had other family members who had been infested with lice. In 91.7% of the families, mother was responsible for examining the children for lice, 52.6% of the families used insecticides, 28% used louse comb for treatment of children.

There was no correlation between mothers Education and infestation, that mean head louse infestation depends on hygienic practices in the home rather than socioeconomic status of the family.

**THE HERPETOFAUNA OF THE GAZA STRIP WITH
PARTICULAR EMPHASIS ON THE VICINITY OF WADI GAZA**

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Abstract

The reptiles and amphibians of the Gaza Strip and Wadi Gaza were surveyed during a period of two years (2002 – 2004). A total number of 21 herpetofaunistic species (2 turtles, 8 lizards, 8 snakes and 3 anurans) belonging to three orders and 15 families was encountered. The species described were all resident and were mostly found throughout the year. The diversity of terrestrial and aquatic ecosystems in the study area encouraged the occurrence of the species. However, the ever-increasing human impact on the existing natural resources in the Gaza Strip has threatened the ecology of wildlife, where the populations of frogs and many reptilian species are declining in an alarming fashion. The results reinforce the necessity of long-term inventories in order to understand the ecology and the dynamics of herpetofaunistic and other wildlife communities in the study area. Finally, the authors recommend improving cooperation of different parties to enhance the public awareness among the Palestinians and to implement environmental laws and legislation to conserve the sensitive and rare species of herpetofauna.

Key Words: Herpetofauna, reptiles, amphibians, survey, Gaza Strip, Wadi Gaza

POLYMORPHISM IN CHILDHOOD HEMATOLOGICAL MALIGNANCY CYP2C19

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Abstract

Cytochrome P450 2C19 (CYP2C19) participates in the metabolism of many clinically important drugs and many xenobiotic compounds. Genetic polymorphisms of the CYP2C19 gene are described to have possible effect on drug treatment and increasing susceptibility to carcinogenic substances. The aim of this study was to determine the frequencies of the major polymorphic CYP2C19 alleles (CYP2C19*2 and CYP2C19*3) and to investigate their association with occurrence of childhood hematological malignancies and/or age of onset of the disease in the investigated patients with comparison to normal subjects. The polymorphism of CYP2C19 was analyzed by a genotyping technique, based on polymerase chain reaction (PCR) followed by restriction enzyme analysis. EDTA blood samples were obtained from 52 previously diagnosed hematological malignancy children (45 from El-Nasser hospital and 7 from the European Gaza hospital) and from 52 normal subjects. The DNA was extracted from the EDTA blood sample for each child. The frequencies of each allele in the cancer group and the control group were compared. In the patient group the frequencies of CYP2C19*2 and CYP2C19*3 were 9.62% and 0.96%, respectively, while in the control group the respective frequencies were 5.77% and 2.88%. These percentages show that there is no significant difference between the control group and the patient group in terms of the frequencies of CYP2C19*2 and CYP2C19*3. The genotyping analysis showed the following results: 15.39% (1*/2*), 1.92% (1*/3*), 1.92% (2*/2*), and 80.77% (1*/1*) in the patients while in the normal subjects the results were 7.69% (1*/2*) , 5.77% (1*/3*), 1.92% (2*/2*), and 84.61% (1*/1*). Data also showed that there is no significant Correlation between the onset age and the polymorphism of the CYP2C19. Moreover, the frequency of affected males was more than that of females. In conclusion, no significant association was found between the CYP2C19 polymorphism and the occurrence or the onset age of the childhood hematological malignancies. Further studies are needed to investigate more CYP2C19 alleles and other important CYP genes polymorphisms in cancer patients.

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IMPACT OF SOCIO-ECONOMIC CONDITIONS AND PARASITIC INFECTION ON HEMOGLOBIN LEVEL AMONG CHILDREN IN UM-UNNASSER VILLAGE, GAZA STRIP

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Abstract

Across-sectional study was conducted to examine the impact of socio-economic conditions and intestinal parasitic infection (IPI) on hemoglobin level among children aged between 2-15 years of Um-Unnasser village North Gaza. The data were collected using structured questionnaire and laboratory analysis of blood and fecal samples. The results showed that of 256 children, 25% were anemic and prevalence was higher in children aged below six years. Overall prevalence of intestinal parasitic infection was 46.9% , *Ascaris lumbricioides* (11.3%),*Giardia lamblia* (8.2%), *Hymenolopis nana* (6.2%) *Entamoeba histolytic* (5.1%), *Strongyloides streccoralis* (2.0%) *Enterobius vermicularis* (2.7%),*Trichuris trichiura* (0.3%) most frequently found, whereas, (10.9%) of children had multiple parasitic infection. There was an association between some socioeconomic conditions and parasitic infection and anemia . These socio-economic factors included age group of the studied children, father education and work. It was found that Children with double parasitic infection had lower hemoglobin level than those who had single parasitic infections except in *Ascaris lumbricioides* and *Giardia lamb*.

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**EFFECT OF CARBAMATE COMPOUND DITHANE M-45 IN
PROTEIN LEVEL OF TISSUES OF *CHANNA PUNCTATUS*
(BLOCH)**

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Abstract

Insecticides reach to aquatic systems by direct application, aerial spraying, and washing from the atmosphere, by precipitation, erosion of land and discharge of effluents from the factories. The concentration of these insecticides is increasing day by day in the ponds, streams and rivers, since they are more frequently used for control of insects. Which is injurious to human being, agriculture field and forest areas. Their accumulation in living and non living spheres endangers the life by modifying various behavioral structure and functional activities. Serious cause of fish mortality has occurred following the leaching of poisonous biocides from agricultural fields to nearby rivers of streams after rainfall.

The aim of present study is to determine in detail the toxicity of an organo-carbamate fungicide, Dithane M-45 on the certain organs like liver and kidney of a fish *Channa punctatus* (Bloch) which is commonly known as "Pond Murrel".

LEPTIN AND SOLUBLE LEPTIN RECEPTOR AMONG OBESE PATIENTS IN THE GAZA STRIP

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Abstract

Leptin is a lately detected adipocytes derived protohormone. It plays an important circulating signal for the regulating body weight. Soluble leptin receptor (OB-Re) makes up the main binding compound for leptin in the blood plasma. This study aimed to ascertain whether an association exist between leptin and OB-Re among obese individuals in the Gaza Strip. Study sample was convenience one and obtained from two biggest obesity clinics in the Gaza strip. It consisted of 83 obese individuals without history of other diseases (case group). Control group consisted of 83 eligible normal weight individuals that was selectively chosen from the same clinics. Self reported structure interview and serum blood sample were obtained from the both groups. Human leptin and soluble leptin receptor were determined by competitive ELISA kits. Logistic Data were analyzed by SPSS WIN. The results showed a significant positive correlation between body mass index (BMI) and leptin hormone among the case individuals ($r = 0.64$, P -value < 0.001). In contrast, the results showed that OB-Re has inverse statistical relationship with BMI for the same individuals ($r = -0.26$, p value $= 0.017$). The results, surprisingly, showed no significant correlation between OB-Re and leptin among the case individuals ($r = -0.16$, p value $= 0.14$). For the case individuals, the leptin was also significantly higher ($t = -4.2$, p value $= 0.00$) for the females (mean = 72.4 ng/ml) than for the males (mean = 44.05 ng/ml). On the other hand, for the same individuals, OB-Re was slightly higher for the females (mean = 9.75 ng/ml) than for the males (mean = 8.91 ng/ml) which was not statistically significant. Serum leptin, cholesterol, triglyceride and LDL-c levels were increased with increasing BMI. Conversely OB-Re and HDL-c were decreased with increasing BMI.

Key words: leptin, soluble leptin receptor, obesity, the Gaza Strip.

GENDER ISSUES IN THE USE OF MOSQUITO BED-NETS IN SOME NIGERIAN RURAL COMMUNITIES

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Abstract

Malaria remains one of the most serious public health problems in Africa and other tropical countries in terms of geographical spread. Globally, about 1.5 -2.7 million people die from malaria yearly, children under 5 years and pregnant women being the most vulnerable groups. In spite of efforts at control there has not been much improvement in the overall malaria picture in the last 25 years; the situation in the rural areas is worsening. Some of the malaria control measures are the use of antimalaria drugs, insecticides and most recently, insecticide-impregnated bed nets – the most promising of all. Some cultural practices affecting the use of mosquito bed nets were examined in thirty nine rural communities from thirteen ethnic groups in Southern Nigeria with the aid of questionnaires. Results showed that females were relatively more favoured than males in the use of bed nets. In the use and maintenance of bed nets among the respondents, 73.6% of men purchased nets, 6.9% mended nets, while 1.5% used nets, as against 26.4%, 83.1% and 98.5%, respectively, for the women. Certain traditional beliefs like the notion that women are the “weaker sex”, and preparation of young girls for marriage, even made bed net use mandatory for some categories of females. Whereas these practices were apparently for the good of the women, the latter were so “favoured” to suit the gender-biased motive of the men. These practices which make men more prone to malaria and other diseases may partly explain the lower life expectancy for men in the rural area. The health of a nation has direct impact on economic development. For a developing nation like Nigeria and, in deed Africa in general, to grow, the health of its people must take top priority. Gender-biased practices that impact negatively on the control or eradication of malaria should be discouraged.

BIOLOGICAL STUDIES ON PARASITES IN GAZA STRIP

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Abstract

During the present work, the prevalence of helminth parasites was examined in 14 bony marine and 1 (cartilage) elasmobranch fishes. These fishes included (209) bony fishes namely. 7 *Epinephelus alexandrinus*, 12 *Dentex gibbosus*, 17 *Sphyraenena Viridensis*, 22 *Pagellus arythrinus*, 21 *Mullus barbatus*, 10 *Mugil cephalus*, 9 *Mugil cephalus* (dahaban), 7 *Argyrosomus ragius*, 7 *Iethrinus* sp., 30 *Sardinella jibossa*, 7 *Trachinotus avatus*, 20 *Lithognathus*, *mormyrus*, 12 *Bacalla*, 25 *Scombla*, and 3 specimens of elasmobranch from *Apychotrema rostrata*., of the above numbers, 206 bony fishes (7.3%) and 3 elasmobranch (66.6%) were found infected with one or two species of helminth parasites. The majority of infected fishes harbored mostly single nematodes infections (6.8%) in bony fishes and nematodes (66.6%) in cartilage fishes.

Double helminth infections in bony fishes were cestodes and nematodes (6.6%).

In fishes females are lower in the level of helminth parasites infection than males, and that is due to estrogen hormone in females which increases the resistance of the host to parasitic infection.

On other hand in Amphibians, the prevalence of helminth parasites was examined in 38 *Bufo regularis*. The majority of the infected specimens harboured single infection mostly cestodes 9 out of 38 (23.7%) and nematodes 7 out of 38 (18.4%).

In Reptiles Turtles (*Chrycmys picta picta*) the examined number was 8, the prevalence of helminth parasites harbored single infection only nematodes (25%). Geckos were free of helminth parasites, the prevalence of helminth parasites was examined in 6 specimens harbored negative infection in trematodes, cestodes and nematodes. The prevalence of helminth parasites was examined in 19 *Agama stellio* harbored single infections in nematodes (57.9%), double infection with nematodes and cestodes was found in the above specimens(21.5%)

In Chameleons (*Chamaeleo chamaeleo*), 1 out of 7 specimens (14.3%) was infected with nematodes only.

In *Chalcides ocellatus*, 1 out of 7 specimens (14.3%) was infected with nematodes.

Common Snakes (*Mabuya spilogaster*)(10) and Black King Snakes (*Lampropeltus getulus nigra*) (7) and Palestine common Viper(*Vipera palestinae*) (22) were free of helminth parasites.

In mammals, all of rats (*Rattus rattus*) (8) were free of helminth parasites. While the prevalence of helminth parasites was examined in 13 big (rats) harbored single infection with nematodes (7.7%), but trematodes and cestodes were absent in big rats.

In six cats (*Felis caracala*) there found just double infection of cestodes and nematodes (50%) from all examined cats. while there were no trematodes or triple helminth infection.

At last the prevalence of helminth parasites was examined in 7 dogs (*Canis familiaris*), all the infected specimens harbored single infection with cestodes, (57.15%).

Recommendations:

More research and studies are needed to explore more about the parasites of fishes, amphibian, reptilia and mammalian in Gaza Strip especially, trematoda and protozoa in the previous animals, in order to determine how can be cured the diseases caused by these parasites in our local environment Also it is important to use more advanced techniques to search for protozoa in such animals.

**INFLUENCE OF GLIMEPIRIDE AND *NERIUM OLEANDER*
EXTRACT ON INSULIN, GLUCOSE LEVELS AND SOME LIVER
ENZYMES ACTIVITIES IN STREPTOZOTOCIN-INDUCED
DIABETIC RATS**

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Abstract

The present study is aimed to assess the therapeutic potential of sulfonylurea drug glimepiride in comparison with *Nerium oleander* plant extract on insulin, glucose levels and some liver enzymes activities in streptozotocin-induced diabetic rats. Animals were divided into control and experimental groups. The experimental group was rendered diabetic by intraperitoneal injection of a single dose of 50 mg/kg body weight streptozotocin. Rats with serum glucose levels >200 mg/dl were subdivided into three sub-groups: rats of the first sub-group were remained without treatment and considered as diabetics. Animals of the second subgroup were orally administered 0.1 mg/kg body weight/day glimepiride allover the experimental period of 4 weeks. The third sub-group was orally received 250 mg/kg body weight/day *Nerium oleander* extract for 4 weeks. Streptozotocin-induced diabetic rats showed hypoinsulinemia and hyperglycemia compared to controls. Strong negative correlation ($r=-0.8$) was found between serum insulin and glucose levels in diabetic rats. This correlation was +0.4 and -0.3 in glimepiride and *Nerium oleander*-treated rats, respectively implying that glimepiride and plant extract improved insulin and glucose levels with the former was more efficient. The activities of serum aspartate aminotransferase, alanine aminotransferase and alkaline phosphatase were significantly increased in streptozotocin-induced diabetic rats compared to controls. Treatment of diabetic rats with glimepiride or *Nerium oleander* extract also improved liver enzymes activities.

Key Words: Diabetic rats, streptozotocin, glimepiride, *Nerium oleander*, therapy.

PROTECTIVE POTENTIAL OF GLIMEPIRIDE AND *NERIUM OLEANDER* EXTRACT ON LIPID PROFILE, BODY GROWTH RATE AND RENAL FUNCTION IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

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Abstract

This study is aimed to assess the protective potential of glimepiride and *Nerium oleander* extract on lipid profile, body growth rate and renal function in streptozotocin-induced diabetic rats. Animals were divided into control and experimental groups. The experimental group was rendered diabetic by intraperitoneal injection of a single dose of 50 mg/kg body weight streptozotocin. Rats with glucose levels >200 mg/dl were subdivided into three sub-groups: rats of the first sub-group were remained without treatment and considered as diabetics. Animals of the second and third subgroups were orally administered 0.1mg/kg body weight daily glimepiride and 250 mg/kg body weight daily *Nerium oleander* extract, respectively for 4 weeks. In streptozotocin-induced diabetic rats serum triglycerides and cholesterol were significantly increased whereas body growth rate was markedly decreased compared to controls. In contrast to uric acid and creatinine, urea concentrations were markedly elevated. Treatment of diabetic rats with glimepiride or plant extract did improve all of these parameters indicating their antidiabetic efficacy.

Key Words: Diabetes rats, lipids, growth rate, kidney, glimepiride, *Nerium oleander*, protection.

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MYCOTOXINS ESTIMATION IN KIDNEY BEANS AND CHICK PEAS (HOMOS) COMMON PALESTINIAN FOOD

By

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Abstract

Toxic metabolites produced by fungi in infected plants or in moldy food supplies, known as mycotoxin industry preparations. It has been estimated that one-quarter of the world's foods and feeds are contaminant (deoxynivalenol and T-2 toxin) in 1975, Ochratoxins in 1980, and fumonisins in 1990. Mycotoxins can elicit estrogenic activities. This first paper is devoted to the aflatoxins, produced by *Aspergillus Flavus*. Primarily maize, peanuts, Oil-seeds, nuts (almond, brazil hazel, pecans, pistachio, walnut), Copra, Figs, and with an economic impact evaluated as reduction of livestock productivity many times greater than that of an indicated a positive correlation between estimated degree of exposure and incidence of human liver cancer. We undertook a comparative investigation of mycotoxins in dry kidney beans and chick peas (homos) which collected from Gaza market. Randomly (20) samples of Chickpeas and kidney beans were collected from Gaza market. The source of samples is Turkey, Israel and U.S.A. And were examined for Aflatoxin, Ochratoxin and T-2 toxins contamination using HPLC. An average of 95% of kidney bean and chick peas samples had mycotoxins residues. The most frequently estimated ones were aflatoxins (100%), Ochratoxins (89%), Zearalenone (72%) and T-2 (0%) in Homos samples. With an average of (200-400) ppm. , (10-40) ppm. And (10-30) ppm. Respectively. In kidney beans samples, Aflatoxins estimated in 100% of positive ones for the presence of mycotoxins, ochratoxin (61%), ZEN (67%) and 0 for T-2 with an average of (150-350) ppm. We suggest that monitoring mycotoxins in imported beans can be simplified by use of predetermined profiles of bean mycoflora for each exporting and importing country or region. This will allow identifying the most-probable mycotoxins, This can also be applied to other field crops. Control system for food safety should be improved and monitored in Palestine.

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**BIOCHEMICAL STUDY ON ALBINO RATS AFTER
ADMINISTRATION OF NITROSAMINE AND THE THERAPEUTIC
ACTION OF VITAMIN C, HONEY BEE OR CRUSHED CITRUS
SEEDS**

Presenter: Prof. Abd El Rahiem A. Ashour

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Abstract

The current investigation was carried out to study the effect of administration of dibutyl nitrosamine (DBNA) precursors namely: dibutylamine (DBA) and sodium nitrite for eight weeks on some chemical blood indices of albino rats and the therapeutic action of vitamin C (150 mg/L), honey bee (100 mg/L) or crushed citrus seeds(100 g/Kg diet) against toxicity induced by DBNA. Nitrosamine administration elevated the concentrations of serum glucose, triglycerides, total cholesterol and nonprotein nitrogenous constituents. Activities of serum aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP) were also increased significantly following DBNA treatment to rats for eight weeks, but total protein were decreased. However, honey bee, Vitamin C and crushed citrus seeds were able to modulate the affected values of the previous biochemical parameters, approximately, near to the control values. Our findings suggest that honey bee, Vitamin C and crushed citrus seeds suppresses DBNA induced hepatocarcinogenesis, maybe, by modulating the antioxidant defense status of the animals

Key word: nitrosamine, liver' enzymes, albino rats, therapeutic effect, natural products.

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**METAZOAN PARASITE SPECIES IN CULTURED MUSSEL
MYTILUS GALLOPROVINCIALIS IN THE THERMAIKOS GULF
(NORTH AEGEAN SEA, GREECE)**

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Published in Diseases of Aquatic Organisms (DAO) Vol. 58(1):55-62.

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Abstract

This is the first study on parasites of cultured *Mytilus galloprovincialis* L. in Greek waters, and is based on samples collected every 2 to 3 mo between September 2000 and November 2001 at 3 stations in the Thermaikos Gulf. Each sample comprised 40 mussels. We found 4 metazoan parasite species: hydroid *Eugymnanthea inquilina*, gill turbellarian *Urastoma cyprinae*, trematode *Proctoces maculatus* and gut copepod *Mytilicola intestinalis*. Of 840 mussels examined, 406 (48.3%) mussels were harbouring hydroids of *E. inquilina*, 278 (33.1%) were infested with *U. cyprinae*, 94 (11.2%) were infested with *M. intestinalis*, and only 7 (0.8%) were infested with *P. maculatus*. The prevalence and intensity of these parasites were related to temperature and pollution. Mussels infested with these parasites had significantly lower condition indices than non-infested mussels; larger mussels were more often infested than smaller ones.

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PROTOZOAN PARASITES IN CULTURED MUSSELS *MYTILUS GALLOPROVINCIALIS* IN THE THERMAIKOS GULF (NORTH AEGEAN SEA, GREECE).

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Published in Diseases of Aquatic Organisms (DAO) Vol. 70(3):251-254.

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Abstract

The protozoans *Ancistrum mytili* (Oligohymenophorea: Ancistridae) and *Marteilia refringens/maurini* (Marteiliidea: Marteiliidae) were found parasitizing cultured mussels *Mytilus galloprovincialis* L. in the Thermaikos Gulf (north Aegean Sea, Greece). The former did not affect the condition index of infected mussels, in contrast to the latter, which did so and which also induced hemocyte infiltration in the affected digestive epithelium. The prevalence of both parasites was relatively high in a polluted area.

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سم النحل وعلاج العديد من أمراض النحل BEE VENOM

مهندس زراعي

راتب إبراهيم سمور

سببى الإنسان حتى نهاية حياته وهو يحاول تفسير الآية الكريمة : " يخرج من بطونها شراب مختلف ألوانه فيه شفاء للناس " لأن القرآن وآياته سببى الى يوم الدين، حيث يثبت في كل يوم شيء جديد من منتجات النحل يفيد في علاج البشرية من كثير من الأمراض وقد نجد في يوم من الأيام علاج لأخطر الأمراض من خلال منتجات النحل العديدة كالعسل وحبوب اللقاح وغذاء الملكات والشمع وسمغ النحل وسم النحل. وفعلاً فقد أثبتت سم النحل فوائد عظيمة في علاج الكثير من الأمراض وخصوصاً في السنوات الأخيرة وبالتحديد بعد اعتماد البروتوكول الحديث في العلاج بلسع النحل عام 2001.

ومن تلك الأمراض:

الشلل الدماغي - ضعف السمع - الصداع النصفي - الروماتيزم - الروماتيد - الربو الشعبي - التهاب اللوزتين - الإمساك - حب الشباب - التآليل - التهاب الكبد الوبائي - آلام المفاصل... الخ.

وهناك العديد من الأمراض التي أصبح يعالجها سم النحل إذ تزيد عن 120 مرض ، بل وفي كل يوم يكتشف علاجات لأمراض لم يكن لها علاج من قبل.

والأهم من ذلك كله فإننا نجد أن الكثير من المرضى يلجأ للسم النحل بعد فشل كافة العلاجات الأخرى سواء منها الكيماوية أو الأعشاب أو خلافه.

علماً بأن الحساسية المفرطة من سم النحل محدودة جداً بين الناس وتقدر بحوالي 2%- أو يمكن للمعالج اتخاذ الإجراءات اللازمة لذلك.

ولذا يجب علينا جميعاً الاهتمام بهذا المجال من العلاج ، ليس لكونه علاج حقيقي فقط وإنما لأنه يعمق إيماننا بديننا الحنيف من خلال آيات القرآن الكريم والذي هو جزء أساسي من عقيدتنا الإسلامية الغراء.

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MYCOTOXINS ESTIMATION IN KIDNEY BEANS AND CHICK PEAS (HOMOS) , COMMON PALESTINIAN FOOD

By

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Abstract

Toxic metabolites produced by fungi in infected plants or in moldy food supplies, known as mycotoxin industry preparations. It has been estimated that one-quarter of the world's foods and feeds are contaminant (deoxynivalenol and T-2 toxin) in 1995, Ochratoxins in 1980, and fumonisins in 1990, Mycotoxins can elicit estrogenic activities. The first paper is devoted to the aflatoxins, produced by *Aspergillus Flavus*. Primarily maize, peanuts, Oil-seeds, nuts (almond, brazil hazel, pecans, pistachio, walnut), Copra, Figs, and with an economic impact evaluated as reduction of livestock productivity many times greater than that of and indicated a positive correlation between estimated degree of exposure and incidence of human liver cancer. We undertook a comparative investigation of mycotoxins in dry kidney beans and chick peas (homos) which collected from Gaza market. Randomly (20) samples of Chickpeas and kidney beans were collected from Gaza market. The source of samples is Turkey, Israel and U.S.A. And were examined for Aflatoxin, Ochratoxin and T-2 toxins contamination using HPLC. An average of 95% of kidney bean and chick peas samples had mycotoxins residues. The most frequently estimated ones were aflatoxins (100%), Ochratoxins (89%), Zearalenone (72%) and T-2 (0%) in Homos samples. With an average of (200-400) ppm. , (10-40) ppm. And (10-30) ppm. Respectively. In kidney beans samples, Aflatoxins estimated in 100% of positive ones for the presence of mycotoxins, ochratoxin (61%), ZEN (67%) and 0 for T-2 with an average of (150-350)ppm. We suggest that monitoring mycotoxins in imported beans can be simplified by use of predetermined profiles of bean mycoflora for each exporting and importing country or region. This will allow identifying the most-probable mycotoxins, This can also be applied to other field crops. Control system for food safety should be improved and monitored in Palestine.

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HISTOLOGICAL AND FUNCTIONAL CHANGES INDUCED BY GIBBERELLINS IN THE LIVER OF ALBINO RATS

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Abstract

Twenty four male albino rats were used in the present investigation to study the histological, histochemicals and ultra structural alterations of the hepatic tissue of male albino rats induced by gibberelline. Experimental rats were giving a dose level of 20 p.p.m. gibberellin in 0.3 ml saline by gavages, two times a week for five weeks. Light microscopic examination of liver sections of treated rats showed clear vacuolation of many hepatic cells ,dilation and congestion of central veins and prevalence of pyknotic and karyolytic nuclei. Dissociated liver cells were surrounded by inflammatory cells filling the spaces previously occupied by liver cells. The ultra structural changes included severe alterations of architecture of hepatic cells and distortions of cytoplasmic organelles. Histochemicals observations revealed that glycogen was significantly depleted in the hepatocytes of treated rats compared to the control groups. Serum concentrations of GPT,GOT and alkaline phosphates enzymes were significantly decreased compared to the control groups.

ACUTE HISTOLOGICAL AND FUNCTIONAL ALTERATIONS INDUCED BY MONOSODIUM GLUTAMATE IN HEPATIC TISSUE OF RATS

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Abstract

The present study was performed to assess the histological and functional alterations of the liver in rats administrated intraperitoneally with monosodium glutamate (MSG) for eight weeks. Two treatment groups of rats (n = 6) were injected intraperitoneally at a dose of 3mg/g/b.w MSG every other day for eight weeks. Control groups of rats were injected with 0.9% NaCl for the same period of time. Sections prepared from the treated liver tissues showed marked histopathological alterations where the trabecular structure in most hepatic lobules had lost their normal shape and arrangement ; the hepatocytes cytoplasm was light, foamy and filled with vacuoles. Moreover, mononuclear cell infiltrations and necrosis of hepatic cells were evident. Dilatation and congestion of central veins were also observed. Electron microscopic examination revealed intracellular vacuolation, swelling and destruction of cytoplasmic organelles. Histochemical observation in the treated rats showed significant depletion of hepatocytes glycogen compared to the control groups. Compared to the control groups, The glutathione S- transferase (GST) activity of the treated liver was significantly increased at the second week of study, while the glutathione peroxidase (GPx) activity was significantly increased to a maximum level at the fourth week of study. However, at the eighth week of the study, the activities of both GST and GPx were decreased in the treated rats compared to the control groups.

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**EFFECT OF ELECTROMAGNETIC FIELD ON SERUM
BIOCHEMICAL PARAMETER IN ALBINO RATS AND
THERAPEUTIC ACTION OF VITAMIN C And E**

Khetam El Wasife

Ismael Abdel Aziz

Mohammed Shabat

Muhemmed Abdelati

The Islamic University of Gaza

Abstract

The aim of the study was to evaluate some biochemical parameters in the serum of albino rats exposed to electromagnetic field (electric field strength of 40- 120 v/m) and the therapeutic action of vitamin C or vitamin E (150mg/L) against harmful effect induced by electromagnetic field. Electromagnetic field exposure decreased the concentrations of serum glucose, triglycerides, total cholesterol, total protein and globulin, but albumin, urea, uric acid and creatinine were increased.

Activities of serum aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP) were increased.

However, vitamin C or E were able to improve most the effect values of the previous biochemical parameters.

Keywords: electromagnetic field – blood serum- liver serum- albino rats- therapeutic effect- vitamin C or E.

HEMATOLOGICAL AND BOCHEMICAL STUDIES FOR LEADED GASOLINE TOXICITY ON GASOLINE WORKERS IN GAZA STRIP

By

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Abstract

The present work is aimed to show the induced toxic effect of leaded gasoline toxicity on gasoline workers in Gaza Strip.

The material of this work consisted of 90 workers occupationally exposed to leaded gasoline and control group of 18 healthy workers who have never been exposed to leaded gasoline .

The gasoline workers were subjected to complete medical examinations using questionnaires which include questions related to health impact of exposures to leaded gasoline.

The exposed group was divided into five sub- groups according to their blood lead levels as follows :

The first group range from 30 to 40 ug/dl, the second range from 40 to 50 ug/dl , the third range from 60 to 70 ug/dl, the forth range from 79 to 80 ug/dl, and the fifth group > 90 ug/dl.

Measurements of levels of lead in serum of gasoline workers made by atomic absorptions. The most common experienced symptoms of lead exposure reported by gasoline workers were headache ,fatigue, irritability lead line in gingival tissue and concentration difficulties .

The present study showed significant decrease ($p<0.05$) in hemoglobin level ,red blood cell count and hematocrit level. On the other hand, mean corpuscular volume and mean corpuscular hemoglobin concentration were non significantly decreased as compared to control group . In contrast , white blood cell count and blood platelets count were elevated markedly with the rise of lead . the present result also showed that serum urea , uric acid ,

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creatinine , total protein , albumin and globulin were significantly increased with increasing worker duration .

Triglycerides and cholesterol levels were significantly increased . the activities of aminotransferases (ALT & AST) , alkaline phosphatase and bilirubin were significantly increased as compared to control group.

On the light of the previous result one can say that lead could exert harmful effects on liver , kidney and blood .

Key words: *Leaded gasoline , gasoline workers , hematological parameters , livers function , kidney function.*

الفيزياء

Physics

MEASUREMENT OF RADON CONCENTRATION IN SOIL AT NORTH GAZA

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Abstract

Solid state nuclear track detectors (CR-39) are used to measure Radon (^{222}Rn) concentration in soil at north Gaza, Palestine. One hundred sixty (160) CR-39 dosimeters with dimension 2x1.5 cm and dosimeter were distributed in five different locations on Gaza {East Beat Hanoun (E BH), West Beat Hanoun (W BH), Al SHaaf (AL SH), East JAbalia (E JA) and Beat Lahia (B L)}. A hole is digged into the soil of about 11cm in diameter and 50cm in depth. Then 70cm long PVC tube is fixed into the hole, leaving 20cm above the soil surface (with the covered top end of tube sticking out the ground by about 20cm). At the bottom of each tube a Radon dosimeter is placed. The exposure time for the dosimeters was 60 days during the months September, October and November of 2004 to allow Radon gas to come to an equilibrium level.

The collected detectors were chemically etched using a 6.00 M solution of NaOH, at a temperature of (70 ± 0.2) oC, for 6 hours, (standard etching condition). An optical microscope with a power of (40 x 10), manually the number of tracks per cm^2 in each detector where counted. We are measured the average Radon concentration in Bq.m^{-3}

Results obtained that the average value of Radon concentration in soil air at north Gaza was 207.24 Bq/m^3 (5.6pCi/L), ranging from (23.48 – 584.15) Bq/m^3 ((0.64 – 15.79) pCi/L), with value standard deviation 34.90 Bq/m^3 (0.94 pCi/L).

There were considerable differences between the individual Radon concentration values for each location, for example for AL SH the smallest value was 150.84 Bq/m^3 (4.08 pCi/L) and for E JA the largest was 246.22 Bq/m^3 (6.66 pCi/L). The overall minimum and maximum were 23.48 Bq/m^3 (0.64 pCi/L) and 584.15 Bq/m^3 (15.79 pCi/L), respectively, which is a difference of almost two orders of magnitude.

Certainly, this study was conducted to provide a health oriented Radon assessment of Gaza strip, and to address long term management goals, especially from the environmental point of view.

AC CONDUCTIVITY AND DIELECTRIC PROPERTIES OF CU-ZN FERRITES

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Abstract

In this work, we have studied the effects of the Zn^{2+} ions on the electric and the dielectric properties of the *Cu* spinel ferrite. The mixed *Cu-Zn* spinel ferrite, of chemical formula $Cu_{1-s}Zn_sFe_2O_4$, where *s* stepped by 0.2 according to $(0.0 \leq s \leq 1.0)$, were prepared from purity metal oxides using the standard ceramic preparation. The AC conductivity was determined for the ferrite samples in the applied frequency of the range $(10^4 - 10^6)Hz$. In this range of frequency, the AC conductivity is increased rapidly as a function of the applied frequency.

The dielectric properties for the ferrite samples were also determined at room temperature. The general trend for all samples was found to decrease continuously with increasing of the applied frequency. The measurements of the electric and the dielectric properties show that, the behavior of the ferrite samples is similar to that of the semiconductor materials. The results of the electric and dielectric properties are in adequate to previous studies for various ferrite compounds. The electron hopping model was also used to explain the electric conductivity for the ferrite samples.

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THE TEMPERATURE DEPENDENT NOISE FIGURE EFFECTS PERFORMANCE ANALYSIS OF EDFAS PUMPED AT 1480 NM

Abdel Hakeim M. Husein, Ali H. El-Astal, Majdi S. Hamada

Abstract

Theoretical study of the temperature dependent noise effects of erbium doped fiber amplifiers (EDFAs) pumped at 1480 nm has been investigated. The temperature dependent propagation equation consideration which is based on the population difference among amplification levels has been used. The population difference depends on pump and signal powers, Boltzman factor K_B , cross-sections, noise figure (NF) and Er^{3+} concentration. The numerical results of this study for the temperature range of $-20^{\circ}C$ to $+60^{\circ}C$ are used to present an analytical expression for the signal gain and noise figure effects in EDFAs length. The amplified spontaneous emission (ASE) has been taken into account.

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QUANTIZATION OF A FREE PARTICLE SYSTEM ON TORIC GEOMETRY

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محاضر بجامعة القدس المفتوحة

Abstract

The free particle system residing on torus is investigated by using the Hamilton-Jacobi method. The equations of motion and the canonical path integral quantization are obtained from the integrability conditions of total differential equation.

The canonical Hamiltonian is obtained directly from the integrability conditions without any need to enlarge the initial coordinates (Stuckelberg coordinates) .

**FORMATION OF A CONDUCTIVE NETWORK ON PLASTIC
SUBSTRATES THROUGH DEPOSITING WELL DISPERSED
CARBON NANOTUBES**

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Abstract

Dispersion of carbon multi wall nanotubes (C-MWNTs) in an aqueous medium was successfully introduced using a microfluidizer processed at a pressure of 1500- 2000 bar. The microfluidizer technique resulted in an increase of the C-MWNTs concentration in the suspension up to solid content of 10 mg / ml. The suspension was modified by inorganic - organic monomer and then deposited using spin coating technique on plastic substrates. The wet layer was cured for 30 min. between 20 and 150 °C producing transparent film of thickness (85 ± 6) nm. A sheet resistance ranged between 30 to 120 $k\Omega_{\square}$ was obtained at low temperature heat treatment. The obtained films exhibit high transparency ($> 85\%$) in the visible range and strong absorption in the UV region. The mechanical durability of the coatings was improved significantly by increasing the concentration of the inorganic-organic monomer. On the other hand a slight increase of the sheet resistance was observed. The layers passed the adhesion tests, exhibited a good abrasion resistance and a hardness of 2H after the Pencil test. The carbon nanotubes have a considerable potential as an alternative approach for transparent conductive coatings. The obtained films can be used mainly in the antistatic and electrostatic dissipation applications.

Key words: nanotechnology, nanotubes, transparent conductive coating, sol-gel

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**NONLINEAR ELECTROMAGNETIC TM SURFACE WAVES IN
MAGNETIC SUPERLATTICES(LANS)FILM**

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Abstract

The propagation characteristics of nonlinear TM surface waves at a lateral antiferromagnetic/nonmagnetic superlattices (LANS) film and a nonlinear dielectric cover have been investigated. LANS are linear frequency-dependent gyromagnetic media. They are described with an effective-medium theory. It is found that the frequency – wave index variation increases with the magnetic fraction . We also calculate and illustrate the variation of the wave index with the power flow for various values of . We found that increases the power of the nonlinear TM surface waves.

COMPARISON OF DIRECTED VERSUS UNDIRECTED ERD''OS-R'ENYI NETWORK IN ISING MAGNET SPINS -II

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Abstract

Scale-free networks [1-15] are a recently developed approach to modeling the interactions found in complex natural and man-made systems. Such networks exhibit a power-law distribution of node link (degree) frequencies $P(k)$ in which a small number of highly connected nodes predominate over a much greater number of sparsely connected ones. On directed Barab'asi-Albert networks with two neighbors selected by each added site, the Ising model with spin $S=1/2$ was not seen to show a spontaneous magnetization. On these same networks the Ising model with spin $S=1, 3/2$ and 2 was seen to show a unusual spontaneous magnetization. However, in all cases on these networks, the Ising model spin $S=1/2, 1, 3/2$ and 2 , the magnetization the decay time for flipping of the magnetization followed an Arrhenius law for Heat Bath algorithms.

In an Erd''os-R'enyi network [1-3], each of N sites is connected to every other site with a low probability p (of the order of $1/N$). Then the number K of neighbors will fluctuate according to a Poisson distribution. One can instead assume that each site selects exactly K neighbors among the other sites. In both cases, one should get a mean-field behavior

for the Ising spins (Metropolis or Glauber kinetics) [4-7]. The new question is to compare in both cases the usual network with the directed network [8], when site A selects site B as a neighbor, and then B influences A but A does not influence B . And then we change from directed to undirected network, so new questions will arise which need to be investigated.

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EFFECT OF SINTERING TEMPERATURE ON THE ELECTROCHROMIC PROPERTIES OF NICKEL-TITANIUM OXIDE SOL-GEL COATINGS

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Abstract

The effect of sintering temperature on the electrochromic properties (EC) of brown coloring anodic electrochromic nickel oxide-titanium oxide sol-gel layers and EC-devices built with them has been studied. Dip-coated NiO₂-TiO₂ layers (75 mol % Ni content) were heated in air for 30 min at different temperatures ranging from 250 to 500 °C. Differential thermal analysis (DTA) coupled with thermogravimetry (TG), mass spectroscopy (MS) and FTIR has been performed with the corresponding xerogel. The electrochromic performance of the layers was studied by in-situ optical (transmittance) and electrochemical methods using a three electrode cell in a 1 M KOH electrolyte, potential range -0.6 V-0.75 V, scan rate 10 mV/s then windows of the configuration K-glass (glass/SnO₂:F, FTO)/ NiO-TiO₂/electrolyte/ CeO₂-TiO₂ / K-glass have been built and characterized. The DTA/TG measurements showed an exothermic double peak accompanied by 45% mass loss around 350°C. The electrochromic response is also affected by the sintering temperature. The change in optical density (ΔOD) during the 100th CV cycle decreased from 0.3 to 0.068 by increasing the temperature from 250 to 500 °C. The optimum temperature for the heat treatment of electrochromic Ni-Ti oxide layers was found to be 350 °C. The windows built with Ni-Ti oxide layers sintered at 350 °C show a coloration efficiency (CE) of ca. 36 cm² C⁻¹ and a life time up to 17000 CA cycles.

Keywords: *sol-gel, NiO-TiO₂, Heat treatment, electrochromic devic*

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**HAMILTON-JACOBI FORMULATION OF THE SCALAR FIELD
COUPLED TO TWO FLAVOURS OF FERMIONS THROUGH
YUKAWA COUPLINGS**

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And

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Abstract

The scalar field coupled to two flavours of fermions through Yukawa couplings is treated as a constrained system using the Hamilton-Jacobi approach. The equations of motion are obtained as total differential equations in many variables. These equations of motion are in exact agreement with those equations that had been obtained by using Dirac's method.

Keywords: Hamilton-Jacobi formalism, Singular Lagrangian.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م
اشتقاق المستويات المسموح بها لتلوث القمح والشاي والحليب ومشتقاته بالنظائر
المشعة الصناعية السيزيوم 137 والسترونسيوم 90

م . رائد أحمد أبو الحاج
مدير دائرة الطاقة المتجددة والتنمية المستدامة - سلطة الطاقة والموارد الطبيعية
دراسات عليا في الوقاية الإشعاعية وأمان المنابع المشعة

ازداد استعمال الطاقة النووية في الفروع المختلفة للنشاطات البشرية ، ومن ذلك استعمال النظائر المشعة في الطب والصناعة والزراعة ولأغراض البحث العلمي وإنتاج الكهرباء ، إضافة للاستعمالات العسكرية ، وقد ارتبط هذا الاستعمال المتزايد بإنتاج وتداول المواد المشعة ، مما نتج عنه تزايد الأخطار المحتملة المرتبطة بهذه النشاطات .

كما وتعتبر الحوادث التي تقع للمفاعلات النووية من عناصر التلوث الهامة ، خاصة وأنه في بعض الحالات لا يتم الإعلان عن حوادث المفاعلات تجنباً لإثارة الرأي العام ضد محطات الطاقة النووية ، وبالرغم من أن المنشآت النووية توجد في الغالب بعيدة عن المناطق العالية الكثافة السكانية ، فإن المناطق المحيطة بها كثيراً ما تكون أراض زراعية أو حتى مناطق ريفية يمكن للحوادث النووية أن تؤدي إلى انطلاق كميات كبيرة من المواد المشعة ، وهذا يستدعي الوقوف على الإجراءات التي يمكن اتخاذها في حال حدوث حادث نووي ، ومثل هذه الإجراءات لا تقتصر على البلدان التي تمتلك منشآت نووية ، وإنما البلدان التي لا تملك مثل هذه المنشآت .

ويعد تقدير الجرعة الناجمة من وجود النظائر المشعة في المواد الغذائية من الأمور الأساسية لتقدير الخطورة المرتبطة بها وذلك بوضع حدود هامة مثل مستويات الإعفاء ومستويات رفع الرقابة ، ومن المعروف أن النظائر المشعة توجد حكماً في أي مادة استهلاكية بكميات معينة وهذه الكمية مهما كانت صغيرة لا بد أن تكون مستندة إلى قوانين السلطة الرقابية ، ولذلك رأينا في هذا البحث أن نقوم بتقدير الجرعة الناجمة من وجود تراكيز معينة للنظيرين ^{137}Cs ، ^{90}Sr في بعض المواد الغذائية (القمح ، الشاي ، الحليب ومشتقاته) وبالتالي اشتقاق المستويات المسموح بها لتلوث كل من المواد السابقة والتي عندها يمكن السماح بالاستفادة من المواد الغذائية السابقة .

وقد تم اختيار النظيرين بسبب كونهما من النظائر المشعة الصناعية والتي لا تتواجد إلا في المفاعلات ، وخصوصاً النظير ^{137}Cs ، والذي يتميز بامتصاص سريع في الجسم مما يؤدي إلى تعرض الجسم إلى جرعة إشعاعية يمكن أخذها بعين الاعتبار .

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

ومن أجل حساب تركيز النشاط الإشعاعي للنظيرين في المواد المدروسة تم تقسيم جرعة عموم الناس (1 mSv/y) إلى عدة أقسام تتناول سيناريوهات التعرض المفترضة ، فمثلا تم افتراض التعرض الناتج عن الحليب ومشتقاته انطلاقا من تناول الحليب والجبنة واللبن والزبدة ، أما بالنسبة للقمح فقد تم افتراض التعرض عن طريق استنشاق الغبار الناتج عن عمليات الطحن والتخزين للدقيق وكذلك التعرض عن طريق الابتلاع ، تم حساب الجرعة المتلقاه من كل سيناريو كل على حده بدلالة الكمية المبتلعة ومعامل الانحفاظ والذي يمثل النسبة بين تركيز النشاط الإشعاعي للمادة المحضرة إلى تركيز المادة الخام .

كما تم افتراض مجموعة السيناريوهات الإشعاعية التي تعتمد على التعرض الإشعاعي الخارجي والاستنشاق والابتلاع للمواد المشعة حيث أنها تعتبر من الأمور الأساسية لاشتقاق قيم النشاط الإشعاعي المسموح به من أجل السلع ، وقد جرى تحديد السيناريوهات عن طريق أخذ بعض الدراسات الإشعاعية المتوفرة واستخدامها من أجل صياغة إطار عمل مناسب للسيناريوهات العامة المستخدمة بشكل عام .

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

NEW EFFICIENT ORGANIC COMPOUNDS IN DYE-SENSITIZED SOLAR CELLS

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Abstract

We demonstrate the use of three new organic compounds (dyes) as efficient materials in dye sensitized solar cells (DSSCs). One of these compounds is a diazapentadiene derivative (1), while the other two compounds are triazole derivatives (2,3). The fabrication of the cell involved use of a commercially available indium tin oxide (ITO) conductive electrode on which a thin layer of TiO₂ was deposited by chemical vapor deposition (CVD). The other electrode was composed of a thin graphitic layer on ITO. A gelled iodine/iodide combination was used as the redox system.

We have studied the current versus voltage (IV) characteristics and the power versus voltage of these DSSCs at a relatively low light intensity. The efficiency and the fill factor of each cell were consequently calculated.

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NON-LINEAR SURFACE WAVES IN A LEFT HANDED- MAGNETIZED FERRITE STRUCTURE

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Abstract

A theoretical investigation of nonlinear surface waves propagating in a planar waveguide structure of a nonlinear Left-handed material (LHM) cover and magnetized Ferrite substrate, has been analyzed. The dispersion relation and the effect of intensity of electric field on the propagation characteristics have been examined. It is found that both of the nonlinearity and the magnetization of Ferrite change the direction of the dispersion curves.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

THE BOUND POLARON UNDER THE EFFECT OF AN EXTERNAL MAGNETIC FIELD

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Abstract

Using the adiabatic approach, the effect of an external magnetic field on the bound polaron is investigated. The energy, the number of phonons around the electron, and the size of the polaron are calculated for the ground state, and for the first two excited states. It is observed that, the magnetic field and the Coulomb field enhances the polaronic effect on the problem. The three fields: The polaronic field, the Coulomb field, and the magnetic field affect each other in an interrelated manner.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**THE TEMPERATURE DEPENDENT NOISE FIGURE EFFECTS
PERFORMANCE ANALYSIS OF EDFAS PUMPED AT 1480 NM**

Abdel Hakeim M. Husein, Ali H. El-Astal, Majdi S. Hamada

Abstract

Theoretical study of the temperature dependent noise effects of erbium doped fiber amplifiers (EDFAs) pumped at 1480 nm has been investigated. The temperature dependent propagation equation consideration which is based on the population difference among amplification levels has been used. The population difference depends on pump and signal powers, Boltzman factor K_B , cross-sections, noise figure (NF) and Er^{3+} concentration. The numerical results of this study for the temperature range of $-20^{\circ}C$ to $+60^{\circ}C$ are used to present an analytical expression for the signal gain and noise figure effects in EDFAs length. The amplified spontaneous emission (ASE) has been taken into account.

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Abstract

Science and technology have profoundly influenced the course of human civilization. Science has provided us remarkable insights into the world we live in. The scientific revolutions of the 21th century have led to many technologies, which promise to herald wholly new eras in many fields. As we stand today at the beginning of a new century, we have to ensure fullest use of these developments for the well being of our people in spite of political pain.

Science and technology have been an integral part of the Arab dream within civilization and culture over the past several millennia. The Arabs became an important scientific resource to the world. They did that through learning from and collaborating with the regional civilizations at the time the Greek, the Roman, the Egyptian, the Persian, the Indian and even the Chinese and then improving that is why we have chosen our slogan to be “**To Learn, To Collaborate, To Improve and Seek Knowledge**”.

NONLINEAR OPTICAL SYMMETRICAL WAVEGUIDE SENSORS : THERMAL EFFECTS

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Abstract

Integrated optical waveguides [1-7] are increasingly attracting more applications in the field of chemical sensing. Optical waveguide sensors offer many advantages such as: small size and capability of performing multi-functional sensor on one chip. The essential part of the optical waveguide sensor makes use of the evanescent field detection principal. Many theoretical studies concerning analysis of linear optical waveguide sensors had been introduced for many planar waveguide structures. Huang and Yan [5,6] had studied the effect of thermal-stress on three layer linear waveguide sensors. He introduced temperature sensitivity and studied the effect of various kinds of stresses on performance. Abadla, et.al [3,4] extended the previous works on linear waveguide sensors to investigate the nonlinear waveguide structure. El-Khozondar, et. al.[7] have also investigated the thermal, and stress effects on a three layer nonlinear waveguide sensor where one layer is a nonlinear medium. In this work, we concern with three nonlinear waveguide sensors where both the substrate and cover are nonlinear media. The proposed structure consists of a linear dielectric film, bounded by two similar nonlinear layers cladding and substrate controlled by temperature. The dispersion relation characteristics and the sensitivity have been derived and the numerical calculations are carried out. The temperature sensitivity is computed. The results are simulated and illustrated in graphical form by using software program called Maple.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

NONLINEAR TE SURFACE WAVES IN LINEAR-NONLINEAR NONMAGNETIC NPM STRUCTURE

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Abstract

In this work, we reintroduce the new design of nonlinear nonmagnetic negative permittivity material (NPM). We derived the dispersion relation for linear-nonlinear nonmagnetic NPM substrate. Thereafter, we solved numerically the dispersion relation of the nonlinear TE surface waves in the structure and the power flow. We found the wave effective refractive index is slightly dependent on the nonlinearity of the structure and the power flow is higher for higher frequencies, whereas the power loss is lower for higher frequencies.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

MESOSCOPIC TRANSPORT AND PERSISTENT CURRENT IN THE AHARONOV-BOHM RINGS

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Abstract

The electronic transport of a non-interacting quantum rings serially connected to a quantum wire is studied via the transfer matrix method. We discuss in detail some features of the band structure in multiple rings (in the presence of a magnetic field) configuration. Moreover, for a uniform quantum ring , the persistent current was found to exhibit a peiodic band structure .The effect of magnetic field was also studied. This field is shown to shift the electronic spectrum and damp the amplitude of the persistent current density.

Key words: quantum physics, electronic transport, persistent current.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

STUDY OF THE CHRONIC RADIATION EXPOSURE SITUATION IN GAZA

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Abstract

Passive diffusion Radon dosimeters containing CR-39 solid state nuclear track detectors of good quality were used to measure Radon concentrations throughout Gaza city. Our sampling strategy was randomly distributed the dosimeters at Gaza city in a bedroom ,in a living room or in kitchen. The(180) detectors were left for about tow months. The collected detectors were chemically etched and each detector was counted number of tracks/cm² was found at all region of Gaza was 41.625 Bq/m³ (1.02 pCi/l) with a range of values between 14.5 and 78.875 Bq/m³ (0.361 and 2.265 pCi/l) and a maximum value of 105 Bq/m³ (2.62 pCi/l) with average standard deviation of 17.01.

The aim of this research is to study the chronic radiation exposure situation in Gaza strip, mainly, natural rotation sources. That is to evaluate the effect of the life style on the overall radiation exposure situations in Gaza. This presents data and static information and brief description of the study area, Gaza. This would highlight the sources of ionizing radiation, with emphasis on the natural sources, the radiation induced health effects that results a chronic radiation exposure situations. Remarkable increases of many diseases are spreading in the country, and these include acute and chronic respiratory disease as well as the lung and blood cancer. The present work is indented to study the chronic radiation exposure situation in Gaza. Since we believe that the naturally occurring radiation sources such as radon would contribute in the annual effective dose of the general public.

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HAMILTON-JACOBI FORMULATION OF SIEGEL SUPERPARTICLE

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Abstract

The Hamilton-Jacobi formalism of constrained systems is used to study Siegel superparticle moving in $R^{4/4}$ flat superspace. The equations of motion for a singular system are obtained as total differential equations in many variables. These equations of motion are in exact agreement with those obtained by Dirac's method.

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**THE HAMILTON-JACOBI ANALYSIS OF DYNAMICAL SYSTEMS
WITH SINGULAR HIGHER ORDER LAGRANGIANS**

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Abstract

Constrained Hamiltonian systems with singular higher-order Lagrangians are investigated by using two methods: Dirac's method and the Hamilton-Jacobi method. Two examples are studied and we confirm that the Dirac's conjecture holds for both systems. It is shown that the equations of motion which are obtained by these two methods are in exact agreement.

Key words: Hamiltonian and Lagrangian approach, Hamilton-Jacobi approach, Dirac's approach, higher order Lagrangians.

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**A MODEL OF FRACTIONAL- DIMENSIONAL SPACE WITH A
FRACTIONAL COULOMB POTENTIAL FOR EXCITONS IN
ANISOTROPIC SOLIDS**

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Abstract

Wannier-Mott excitons in anisotropic or confined systems are studied using the model of fractional-dimensional space. The hydrogenic Schrodinger equation is solved in a dimensional fractional space with a Coulomb potential proportional to $\frac{1}{r^{b-2}}$, $2 \leq b \leq 4$. The wave functions are studied in terms of spatial dimensionality and the results for $b = 3$ are compared with those obtained in literature.

MEASUREMENT OF RADIATION IN TAP WATER IN THE NORTH-EAST OF GAZA STRIP (AL-NASER)

M. O. El-Ghossain, and Abedalqader Ahmed Abu Shammala

Abstract

Radiation comes from outer space (cosmic), the ground (terrestrial), and even from within our own bodies. It is present in the air we breathe, the food we eat, the water we drink, and in the construction materials used to build our homes [1]. Exposure to radon and its progeny is believed to be associated with increased risks of several kinds of cancer. When radon or its progeny is inhaled, lung cancer accounts for most of the total incremental cancer risk. Ingestion of radon in water is suspected of being associated with increased risk of tumors of several internal organs, primarily the stomach. As required by the Environmental Protection Agency (EPA) arranged for the National Academy of Sciences (NAS) to assess the health risks of radon in drinking water [2].

We measured the activity of Radiation, and Alpha contamination, in tap water in the north-east of Gaza Strip in general **Track Detectors (CR-39)**. Nasser region of Gaza Strip divided into four regions, in our survey, included, Nasser west (A), Nasser east (B), Nasser shakhradwan (C), and Nasser south (D). From each area, we have obtained ten of samples, each sample taken from the houses of each area. The samples exposed to CR-39 detectors; the exposure time for the detectors was 74 days to allow radon gas to come to an equilibrium level. The collected detectors were chemically etched using a 6 M (Mole) solution of NaOH, at a temperature of 70°C, for 6 hours. The number of tracks per cm² in each detector were manually counted by an optical microscope with power of (40×10). We measured the average of Gross Alpha contamination in Bq/m³. Results obtained show that the concentration of alpha activity ranges from (0.836 – 12.958) Bq/m³, the average value 4.012 Bq/m³ and standard deviation 3.011. Results obtained show that the average gross alpha contamination in Nasser west 4.222 Bq/m³, Nasser east 3.05 Bq/m³, Nasser shakhradwan 5.182 Bq/m³ and Nasser south is 3.593 Bq/m³.

الكيمياء

Chemistry

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

BEHAVIOR OF THYMOL BLUE ENTRAPPED IN SOL- GEL MATRIX AS ANALYTICAL pH-INDICATOR

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Abstract

This paper considers the nature of interactions between the sol gel derived inorganic matrix and Thymol blue pH-indicator, the method is based on the physical entrapment of the reagent molecules in sol gel matrix, the immobilized Thymol blue pH-indicator shows similar behavior as its solution counterpart. The UV/Vis spectra indicate that the Thymol blue retains its structure during the sol gel reactions in terms of response to pH . Thymol blue can be regarded as uniformly distributed in the sol gel matrix , the use of SDS surfactant has positive effects on the immobilized Thymol blue monolithic disk due to homogenization of the polymerizing system. This observation has been confirmed using polarized microscopy and white light interferometer .

Key words: Thymol blue pH-indicator, immobilization of indicators, sol gel entrapment

**POTENTIOMETRIC FLOW INJECTION ANALYSIS OF
DICYCLOMINE HYDROCHLORIDE IN SERUM, URINE AND
MILK**

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Abstract

Five plastic membrane electrodes for the determination of dicyclomine hydrochloride (DcCl) were fabricated and fully characterized in terms of composition, life span, usable pH range, working concentration range and temperature. The membranes of these electrodes consist of dicyclominium-silicotungstate (Dc-ST), silicomolybdate (Dc-SM), phosphotungstate (Dc-PT), phosphomolybdate (Dc-PM) or tetraphenylborate (Dc-TPB) ion-associations dispersed in PVC matrix with dibutyl phthalate plasticizer. The electrodes showed near-Nernstian response over the concentration range of 4.0×10^{-6} to 1.0×10^{-2} M DcCl and applied to the potentiometric determination of dicyclominium ion in pharmaceutical preparations, serum, urine and milk in batch and flow injection (FI) conditions with average recoveries of 96.1–102.7% and relative standard deviation of 0.055–1.994%. The electrodes exhibit good selectivity for DcCl with respect to a large number of inorganic cations, organic cations, sugars and amino acids. The sensitivities of these electrodes are high enough to measure as low as 1.73 $\mu\text{g/ml}$ of DcCl which permit the determination of the K_{sp} values of the ion-associates used. The proposed potentiometric methods offer the advantages of simplicity, accuracy, automation feasibility and applicability to turbid and colored sample solutions.

Keywords: Ion-selective electrode; Ion-association; PVC membrane electrode; Dicyclomine hydrochloride; FI conditions; Biological fluids

PREPARATION OF IMMOBILIZED-POLYSILOXANE ETHYLNEDIAMINETRIACETIC ACID AND ITS APPLICATION

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Abstract

A new insoluble porous solid functionalized ligand system bearing triacetic acid chelating ligand groups of the general formula P-(CH₂)₃N(CH₂COOEt)-(CH₂)₂-N(CH₂COOEt)₂ (where P represents [Si-O]_n) was prepared. Preparation was achieved by the premodification of ethylenediamine silane agent with ethyl chloroacetate to introduce the ethylacetate functional groups. The new silane agent was polymerized with tetraethylorthosilicate via the sol gel process. The acetate groups were hydrolyzed using HCl. The elemental analysis and FTIR results showed that ethylacetate groups (-CH₂COOEt) were introduced onto polysiloxane network. The new functionalized ligand system exhibits high capacity for uptake of the metal ions (Co²⁺, Ni²⁺ and Cu²⁺). This functionalized ligand system form 1:1 metal to ligand ratio complexes. The ligand system also showed high selectivity to separate a mixture of metal ions [Co(II), Ni(II) and Cu(II)] when used as chromatographic stationary phase. The ligand system preconcentrated Cu(II) effectively when used as a stationery phase extractant. The optimum pH appeared to be pH=5 using acetate buffer solution as an eluent. The chemisorbed metal ions were regenerated from the solid extractant using 0.5 M HCl.

KEY WORDS: Metal uptake, ethylenediamine, polysiloxanes, metal ions separation, preconcentration of metal ions, immobilized-polysiloxane ligand systems.

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**ELECTROCATALYTIC OXIDATION OF COMMERCIAL
FENAMIPHOS BY USING TI/PBO₂, C/PBO₂ AND PB/PBO₂
MODIFIED ELECTRODES**

N. Abu Ghalwa, S. Zourab, F. Zaggout, N. khdeer, and M. Al-Asqalany

Abstract

Present work concerns with preparation of some modified electrodes which can be used as anodes for the electrocatalytic oxidation process of the Fenamiphos, which is agrochemical, in their simulating solutions. The lead dioxide were electrodeposited on C, Pb, and Ti substrates. The results of electrocatalytic oxidation process of the agrochemicals solutions were expressed in terms of the remaining concentration and COD removal, which were determined instrumentally. The different operating conditions of treatment process were studied which include: current density, pH, temperature, time, type of conductive electrolyte and its specific conductance initial concentration. The optimum operating conditions for this agrochemical and electrode were determined. The under test electrodes gave good results for the removal of Fenamiphos and COD. It was found the efficiently of the modified electrodes obey the following $Ti/PbO_2 > C/PbO_2 > Pb/PbO_2$. HPLC was used to determine, qualitatively, fenamiphos degradation. Also, the mechanism for fenamiphos degradation is suggested.

Key words: electrode, agrochemical, electrodeposition, electrocatalysis, electrooxidation, lead dioxide, Fenamiphos.

**DEVELOPMENT OF A NOVEL SOLID-STATE PH SENSOR
ELECTRODE BASED ON TITANIUM OXIDE THIN FILM AS AN
INDICATOR ELECTRODE IN POTENTIOMETRIC ACID-BASE
TITRATIONS IN FUSED NaNO_3 AT 350°C**

By Naser Abu Ghalwa and Issa El-Nahhal

Abstract

A solid-state pH sensor was fabricated using a transparent conductive titanium oxide film on a glass substrate. The coating of the glass substrate was achieved by a novel simple chemical vapor deposition (CVD) procedure. The sensor slope was found to increase as the temperature of the solution was increased. The performance of the sensor was investigated in the pH range from 2.2 to 11.19. The E-pH curve is linear with slope of 0.054V at 298.15K. This value is closed to the theoretical value $2.303RT/F$ (0.059 V at 298.15). The standard potential of this electrode, E° , is computed as 177.58 mV with respect to the SCE as reference electrode. Results obtained by the suggested sensor compares very well with conventional pH electrodes where the square of the correlation coefficient was 0.998. This electrode can be used as an indicator electrode in potentiometric acid-base titration. This electrode behaves reversibly and responds to the oxide ion concentration in molten NaNO_3 . $\text{K}_2\text{Cr}_2\text{O}_7$ was potentiometrically titrated with Na_2O_2 and K_2CO_3 as titrants in molten NaNO_3 at 350°C , using the above mentioned indicator electrodes. Also, the acidity (basicity) scale of these oxyanions was established in molten NaNO_3 at 350°C .

Key words: pH Sensor; Titanium Oxide; Conductive Thin Film Titanium Oxide; Electrodes; Potentiometric Titration.

HYDROGEN STORAGE IN A HIGHLY POROUS SOLID DERIVED FROM G-ZIRCONIUM PHOSPHATE

Angew. Chem. Int. Ed. 2006, 45, 1 – 4

Ernesto Brunet, Hussein M. H. Alhendawi, Carlos Cerro, María José de la Mata, Olga Juanes, and Juan Carlos Rodríguez-Ubis

Abstract

The clean production of hydrogen by renewable power sources will make this element the energy vector of the future.[1] However, the handling of this tiny molecule poses extraordinary problems, especially in vehicles, because of the enormous volume occupied by this gas under normal conditions (ca. 12L g⁻¹). Efficient hydrogen storage is thus paramount for the safe application of this technology. One approach to accomplish this goal involves its physisorption in porous solid materials, where the packing of hydrogen molecules must be as dense as possible so as to achieve the maximum volumetric density with the lowest feasible amount of additional material. The number of reports on this topic is vast[2] but, to the best of our knowledge, organic-inorganic layered structures have never been tried for this purpose. The layered salts of zirconium phosphate (ZrP) readily yield pillared scaffolds.[3] We have shown in previous studies that the surface phosphate groups in g-ZrP layers are amenable to sequential replacement by phosphonates and hypophosphite which leads to drastic changes in the porosity.[4]

We describe herein the incorporation of rigid 4,4'-terphenyldiphosphonate (**TPh**) into g-ZrP and an attempt to further exchange the residual surface phosphate groups with hypophosphite, in the hope that the resultant nonpolar material would be highly porous and able to store reasonable levels of hydrogen gas.

Topotactic exchange (65%) of g-zirconium phosphate with terphenyldiphosphonic acid yielded a pillared material with a specific area of 90 m²g⁻¹. Subsequent treatment with hypophosphorous acid afforded a material of a type, with no incorporated hypophosphite and a specific area of 400 m²g⁻¹, which took up 74 cm³g⁻¹ of H₂ at 650 Torr/77 K.

**C-ACYLATIONS OF POLYMERIC PHOSPHORANYLIDENE
ACETATES FOR C-TERMINAL VARIATION OF PEPTIDE
CARBOXYLIC ACIDS.**

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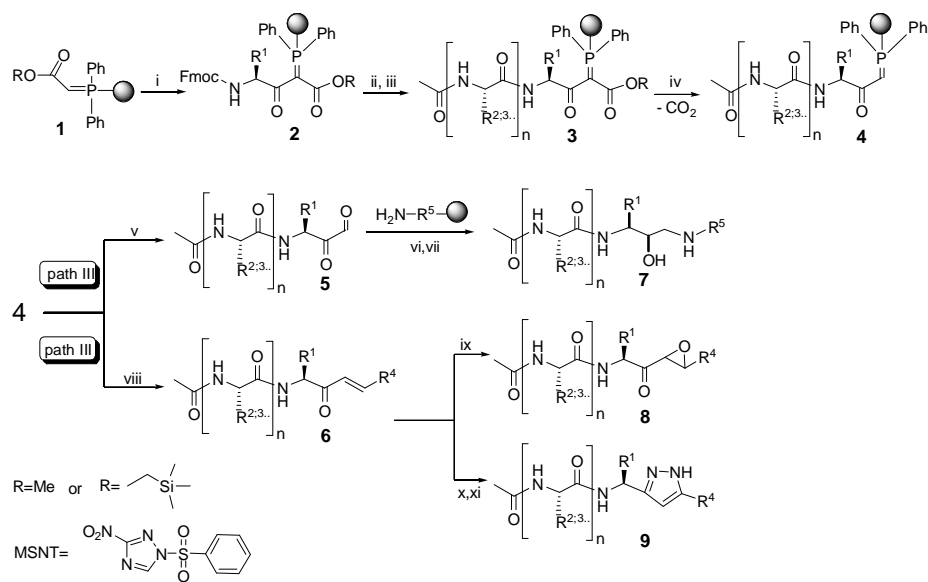
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Introduction

We have recently demonstrated an efficient C-acylation of polymer-supported 2-phosphoranylidene acetonitriles which could be further employed in Fmoc-based peptide chemistry eventually yielding a library of norstatines as transition state isosteres.^[1,2] In continuation we now further report that the acylphosphorane **2** can be efficiently synthesised by C-Acylation of yet another class of linker reagents, the polymer-supported 2-phosphoranylidene acetates **1**. The phosphorane **2** was employed in standard peptide synthesis and could be cleaved of the resins by three alternative methods leading to various C-terminal variations of peptide carboxylic acids including peptidyl 4-amino-2,3-dioxo butanoates (peptidyl-2,3-diketoesters), peptidyl-1-amino-3-buten-4-ones **6**, and peptidyl-3-amino-2-oxo-propanals **5** (peptidyl-ketoaldehydes).^[3,4] These compounds are excellent intermediates for the synthesis of pharmaceutically important compounds such as 1,5-diamino-3-hydroxy-propane **7**, and for fast synthesis of peptidyl heterocycles such as epoxides **8**, pyrazoles **9** etc. on the C-terminus.



Scheme 1:Chemical diversity through the C-acylation of phosphoranes

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THERMODYNAMIC PARAMETERS OF SOME FATTY ACIDS COUPLING TO OVALBUMIN BY FLUORESCENCE METHOD

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Abstract

The present study aimed to investigate association constants and thermodynamic parameters of coupling of some fatty acids (FAs) to ovalbumin (Oval) at different temperatures in the range of 20-50 °C using fluorescence method. FAs/Oval coupling resulted in a change of the fluorescence emission intensity and was found to be temperature dependent. The emission spectra resulting from the coupling was analyzed according to Scatchard plots to obtain the association constants and number of binding sites. For, example, the association constant K_a was $1.5 \times 10^{-3} \text{ M}^{-1}$ at 25 °C. From the temperature dependence of K_a values, the changes in enthalpy (ΔH°) and entropy (ΔS°) associated with the coupling were estimated using Van't Hoff plots. However, enthalpy-entropy compensation were noticed in all cases. The results also indicated that FAs/Oval interaction was found to be enthalpically driven.

Key words: Ovalbumin, Fatty acids, Thermodynamic parameters, coupling, enthalpy-entropy compensation.

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**DETERMINATION OF L-VESAMICOL IN SERUM SAMPLES
USING ENANTIOSELECTIVE, POTENTIOMETRIC MEMBRANE
ELECTRODES BASED ON ANTIBIOTICS**

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Abstract

Enantioselective, potentiometric membrane electrodes (EPMEs) based on antibiotics are proposed for the enantioanalysis of L-vesamicol. A carbon paste was modified with antibiotics (vancomycin, teicoplanin, and teicoplanin modified with acetonitrile), as chiral selectors. The EPMEs based on antibiotics were reliably used for enantiopurity tests of L-vesamicol using the direct potentiometric technique. The following linear concentration ranges: 1.0×10^{-6} – 1.0×10^{-4} , 1.0×10^{-6} – 1×10^{-3} and 1×10^{-7} – 1×10^{-2} mol/L; and detection limits: 1.1×10^{-7} , 9.6×10^{-8} , and 3.6×10^{-8} mol/L were determined for vancomycin, teicoplanin, and teicoplanin modified with acetonitrile-based EPMEs, respectively. The proposed EPMEs were applied for the enantioanalysis of L-vesamicol in urine samples.

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**LIGAND DESIGN: SYNTHESIS AND CHARACTERIZATION OF
MACROCYCLIC COMPLEXES WITH NEW SETS OF N₂O₂ AND
N₄ DONOR ATOMS**

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Abstract

The reaction of salicyldehyde with 1,2- diamino ethan and 1,2- dibromoethane in the presence of transition metal ions yielded two different products depending upon the concentration of the reactants. The products are of the type : N₂O₂ and N₄ donor sets of compounds. The characterization of these complexes is in progress and will be presented at the time of the conference .

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**CHEMICALLY MODIFIED CARBON PASTE ELECTRODE FOR
POTENTIOMETRIC ANALYSIS OF CYPROHEPTADINE
HYDROCHLORIDE IN SERUM AND URINE**

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***Chemistry Department, College of Sciences, The Islamic University of Gaza,
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Abstract

A new carbon-paste electrode for cyproheptadine hydrochloride (CyCl) was prepared and fully characterized in terms of composition, response time, thermal stability and usable pH ranges. The electrode active recognition is by liquid ion-exchange mechanism via the use of the cyprohetadiniumtetrphenylborate (CY-TPB) as ion-exchanger dissolved in tricresyl phosphate (TCP) as a more suitable solvent mediator for the paste and sodium tetrphenylborate (Na-TPB) as additive. The electrode showed a Nernstian slope of 58.6 ± 2 mV/decade over the concentration range of 3.8×10^{-6} – 1.0×10^{-2} M with very low detection limit of 4.6×10^{-7} . The electrode exhibits good selectivity for CyCl with respect to a large number of inorganic cations, sugars, amino acids. The developed electrode was applied to the potentiometric determination of cyproheptadinium ion in its aqueous solution, pharmaceutical preparations and biological fluids (serum and urine). The proposed potentiometric methods offer the advantages of simplicity, accuracy, automation feasibility and applicability to turbid and colored sample solutions.

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DEGRADATION OF CHORPYRIFOS PESTICIDE USING FREE AND SOL-GEL IMMOBILIZED BACTERIA

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a),d) Chemistry Dep. AL-Aqsa University b) Chemistry Dep Islamic University c) Ain-shams University

Abstract

Three chorpyrifos-degrading bacteria were isolated from Khan-Younes Gaza soil and identified as Burkholderia cepacia. The ability of the strain to degrade chorpyrifos were examine using both free and sol-gel immobilized bacteria using 200 mg/L chorpyrifos. The concentration of the pesticides was lowered to less than 4 mg/L and 58 mg/L for free and immobilized respectively. Higher degradation rate of chorpyrifos was observed for free bacteria compared with immobilized bacteria. Optimum pH was found to be 7 for the degradation process for both immobilized and free bacteria. Temperature has an effect on the degradation of chorpyrifos by the two forms of bacteria, maximum degradation was observed at 30 °C.

الإيدز ونظام المناعة في الجسم

أ.د. أحمد عبد الله ثابت

الجامعة الإسلامية - كلية العلوم - قسم الكيمياء (الكيمياء الحيوية)

مرض الإيدز (Acquired Immuno Deficiency Syndrome (AIDS) أو ما يعرف بمرض فقدان المناعة المكتسب هو كارثة تصيب الجسم عندما يصاب بفيروس خاص يعرف بفيروس الإيدز (Human Immuno deficiency Virus (HIV) .

يتواجد هذا المرض ويصيب هذا الفيروس حالياً أكثر من 42 مليون شخص معظمهم من الشباب ومن كلا الجنسين ، وإصابة هذا الفيروس لشخص ما وظهور المرض فيه يعمل على تحطيم نظامه المناعي وانهاره ويجعله غير قادر على مقاومة الكائنات الدقيقة التي يتعرض لها يومياً ، وبحوله إلى كم هزيل مهمل غير قادر على العمل والحياة .

خطورة فيروس الإيدز تكمن في مهاجمته النظام المناعي للجسم في قلبه حيث أنه يهاجم الخلايا التي تنبه خلايا الجسم المناعية وتحفزها للاستعداد لمقاومة الغازي الغريب ، فهو يهاجم خلايا T المساعدة

(Helper T cells) التي عند مهاجمة الجسم بالكائنات المسببة للأمراض تعمل على تنشيط خلايا B الليمفاوية المناعية (B-lymphocytes) التي يقع على عاتقها إنتاج الأجسام المضادة (Antibodies) ، وأيضاً تنشيط خلايا T الليمفاوية (T- lymphocytes) المناعية القاتلة (Cytotoxic) التي تعمل على تدمير الخلايا التي أصيبت بالكائنات الدقيقة في الجسم لمنع تكاثر هذه الكائنات فيها ومنع مهاجمة خلايا أخرى ، كما أن خلايا T القاتلة تهاجم الخلايا السرطانية وتعمل على تدميرها .

يتكون فيروس الإيدز من مواد دهنية وبروتينات ومنظومة وراثية من نوع RNA ، ويهاجم هذا الفيروس خلايا T المساعدة حيث يدخل إلى داخلها ويوظف مكوناتها الخاصة وإمكاناتها من أجل تكوين فيروسات إيدز جديدة بالملايين تخرج تاركة وراءها بقايا خلايا محطمة لتهاجم خلايا أخرى .

ينقل فيروس الإيدز من شخص إلى آخر عن طريق سوائل الجسم كالدم والسائل المنوي وإفرازات المهبل وحليب الأم ، ويعالج هذا المرض عادة باستخدام أدوية عبارة عن مثبطات

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إنزيمات مسؤولة عن إتمام دورة حياة الفيروس وتكوينه ، ومعظم هذه المثبطات مركبات نيكليوسيدية ونيكليوتيدية مصنعة عالية الثمن ، حيث تبلغ تكلفة معالجة مريض الإيدز حوالي 20 ألف دولار سنوياً ، ولن يكون العلاج شافياً لقدرة هذا الفيروس على تغيير منظومته الوراثية وبالتالي عدم الاستجابة لهذه الأدوية .

سجلت في فلسطين في عام 2003 ما يقارب 55 حالة إيدز ، 44 منها ذكور و 9 إناث و 2 حالة مبهمة من ناحية جنسية وإعمار ما بين 20-39 عاماً .

الغرض من إلقاء هذه المحاضرة هو التعرف على هذا المرض الخطير المستورد من ناحية أسبابه وقنوات انتقاله وأعراضه وإمكانيات المعالجة والتغلب عليه والوقوف على آخر المستجدات في هذا المجال .

SPECTROPHOTOMETRIC DETERMINATION OF CIPROFLOXACIN AND AMOXICILLIN

*Mahmoud Mohamad Issa, R'afat Mahmoud Nejem, Naser Said El-Abadla, Akila
Amin Saleh, Monther Hosny AlKholy*

Abstract

A simple low cost spectrophotometric method was developed for the determination of ciprofloxacin and amoxicillin was developed based on their oxidation with Fe(III) and subsequent reaction of Fe(II) with potassium ferricyanide to form prussian blue color (λ_{\max} , 700nm). The optimum experimental conditions for the reactions have been studied carefully. Beer's law is obeyed in the concentration ranges of 0.5-8.0 μgml^{-1} for ciprofloxacin and 0.5-5.0 μgml^{-1} for amoxicillin. The molar absorptivity values are 4.0×10^4 and 7.42×10^4 $\text{Lmol}^{-1}\text{cm}^{-1}$ for ciprofloxacin and amoxicillin, respectively.

The limits of detection (LOD) and quantification (LOQ) are 0.07 and 0.06 μgml^{-1} for ciprofloxacin and 0.23 and 0.20 μgml^{-1} for amoxicillin which indicate the high sensitivity of the proposed method. The intra and inter-assay coefficients of variation were less than 6% and the recoveries ranged from 92 to 99%. The proposed method has been utilized for the determination of ciprofloxacin and amoxicillin in their pharmaceutical formulations. The determined amounts of ciprofloxacin and amoxicillin in the pharmaceutical formulations was in good agreement with the declared amounts. The results demonstrated that the method has equal accuracy and precision as the official as found from the t- and F-values.

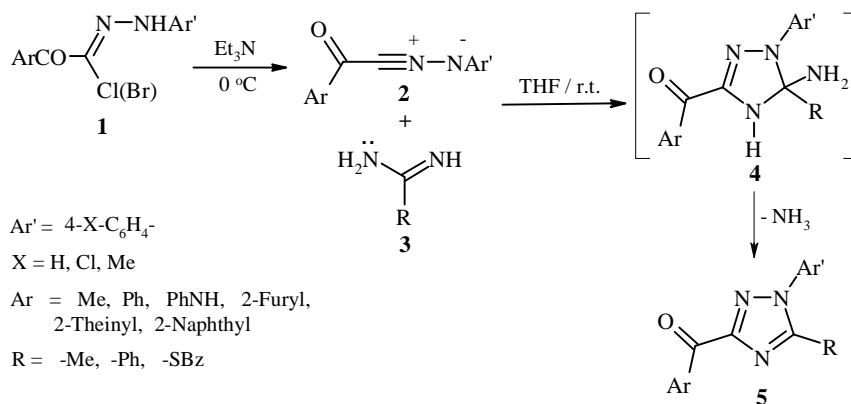
**HETEROCYCLIC SYNTHESIS USING NITRILIMINES.
SYNTHESIS OF AROMATIC TRIAZOLES**

Hany M. Dalloul

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Abstract

Nitrilimines are well known to undergo 1,3-dipolar cycloaddition with multiple bonds leading to five membered ring heterocycles, among which 1,2,4-triazole derivatives. These azoles represent a class of heterocyclic compounds that have been associated with several pharmacological, medicinal and industrial applications. In continuation of our work concerning the utility of nitrilimines in the synthesis of heterocyclic compounds, we investigated the reaction of C-substituted-N-arylnitrilimines with amidines in an attempt to synthesize a new class of 1,2,4-triazoles in anticipation of expected interesting biological activities. In the present study, a new series of substituted aromatic 1,2,4-triazoles **5** were synthesized in good yield by reacting hydrazonoyl halides **1** with acetamidine, benzamidine, and S-benzylthiuronium chloride in presence of triethylamine as a base in tetrahydrofuran at room temperature (Scheme).



Scheme: Synthetic pathway for aromatic triazoles.

KINETICS OF THE DEGRADATIVE OXIDATION OF ORGANIC DYES IN WATER USING VACUME ULTRA VIOLET RADIATION

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Abstract

Advanced oxidation method (AOM) where hydroxyl free radical is the main oxidizer was suggested to treat a variety of industrial wastes containing a range of toxic organic compounds. The process (AOM) may include different techniques to generate OH free radical; H₂O₂ was mainly been used as a source of OH free radicals in the presence of homogeneous catalyst such as Fe²⁺ or heterogeneous like TiO₂. H₂O₂ was also used with UV, ozone or each as different techniques in AOM to produce the powerful OH[•] in addition to some other techniques.

In this study vacuum ultraviolet radiation of 185 nm wave length was used alone as an advanced oxidation technique, this method is supposed to be the most clean technique among the others. Five organic dyes were examined as model pollutants. Trinitrophenol (picric acid) as the most persistent one; was selected for more detailed kinetic investigations. The influence of different reaction parameters was studied; salinity (ionic strength), pH, temperature and radiation intensity. Spectrophotometric methods were used to follow the kinetics of the oxidation reaction.

It follows from the obtained results that vacuum-UV radiation in the presence of atmospheric oxygen is an efficient method for the degradative oxidation of the five examined dyes in different rates according to persistency of pollutant dye. The reaction was promoted by rising the temperature, rising pH, increasing radiation intensity per volume of the treated water and inhibited by increasing salinity

Keywords: A.O.M., VUV, wastewater treatment, radiochemistry, organic pollutants.

"تحضير ودراسة ألواح الخلية القاعدية (نيكل - كادميوم) باستخدام طريقة التلييد"

محمد عدنان محمد نجم

طالب دكتوراه في جامعة شرقي البحر الأبيض المتوسط /قبرص التركية

ملخص البحث

تم تلييد النيكل باستخدام حجم حبيبات (40,125) مايكروميتر في درجة حرارة 650°م والكادميوم باستخدام حجم الحبيبات (53,100,150) مايكروميتر في درجة 175°م ووجد الزمن الأمثل للحصول على ألواح نيكل وكادميوم هو 60 دقيقة وجرت عملية التلييد في جو خامل من غاز النيتروجين حيث تم الحصول على الألواح التي درست خصائصها ووجدت بأنها متشابهة لكل من النيكل والكادميوم ، فالنفاذية الظاهرية تقل بزيادة النسبة المئوية لزيادة الوزن بعد وضع اللوح الملبد في محلول ملحه وتزداد بزيادة حجم الحبيبات ، والمقاومة الكهربائية تزداد مع زيادة حجم الحبيبات وزيادة النفاذية الظاهرية ، والقوى الميكانيكية تقل مع زيادة حجم الحبيبات وزيادة النفاذية الظاهرية ، وزيادة القوة الميكانيكية تؤدي إلى نقصان المقاومة الكهربائية ، وبما أن الهدف من عمليات التلييد هو استخدام ألواح النيكل والكادميوم كأقطاب خلية (نيكل - كادميوم) القاعدية وخصائص ألواح هذه الخلية أن تكون عالية النفاذية مما يحتم تقليل الفترة الزمنية التي يوضع فيها اللوح في محلول ملحه واستخدام حجم حبيبات مناسب للحصول على أفضل نفاذية غير أن المقاومة الكهربائية التي يجب أن تكون قليلة في هذه الألواح تزداد بزيادة النفاذية وحجم الحبيبات أي عكس ما هو مطلوب ، كذلك القوة الميكانيكية فالمطلوب أن تكون عالية وعليه كان يجب أن تكون العملية توفيقية للحصول على أفضل الخصائص .

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REMOVAL OF ORGANIC POLLUTANTS FROM WATER BY ORGANOCLAYS.

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Abstract

Contamination of water resources with organic pesticides becomes a pressing problem in Gaza due to the overuse of pesticides in the agricultural production. This study aims to remove linuron and bromoxynil from contaminated water. Ca⁺²-bentonite surfaces were activated for removal of linuron or bromoxynil from water by simple ion exchange reaction using Hexadecyl tributyl phosphonium (HDTBP⁺) or trimethylbenzyl ammonium (BTMA) salts. HPLC results showed that Ca⁺²-bentonite is a poor removing materials (adsorbent) both linuron and bromoxynil, whereas HDTBP⁺-bentonite is a powerful removing materials (very good adsorbent) for linuron and bromoxynil due to changing Ca⁺²-bentonite surfaces from hydrophilic to hydrophobic. Addition of inorganic salt to (e.g NaCl) to the aqueous solution further increased the removed amounts of both herbicides from water. Kinetic studies showed that removal of linuron was not affected by temperature rising or pH of the solution. These results suggest that HDTBP⁺-Bentonite is a promising porous material for removal of linuron and bromoxynil from water. The application of these materials in water filter may reduce water contamination.

Key Words: Linuron, bromoxynil, bentonite; HDTBP⁺, adsorbent.

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USING TiO₂ WITH SUN LIGHT AND H₂O₂ TO ELIMINATE SOME ORGANIC POLLUTANTS

Monther salem, Samia Mokhtar and Khaled El-sousy

نائب مدير المراقبة والتفتيش
سلطة جودة البيئة

Abstract

Many heterogeneous catalysts have special oxygen transfer properties which improve the utility of hydrogen peroxide. The most common of these is titanium dioxide (TiO₂). The oxidation power of this method depends mainly on the highly reactive hydroxyl radicals (OH^{*}) generated. Today advanced oxidation method (AOM) which use hydrogen peroxide with TiO₂ under sun light is suggested to treat a variety of industrial wastes containing a range of toxic organic compounds (phenols, formaldehyde, complex wastes derived from dyestuffs, pesticides, wood preservatives, plastics additives, and rubber chemicals).The process (AOM) may be applied to wastewaters, sludge, or contaminated soils. In this project, for laboratory samples which contain a three substrates with various oxidation potential hard, moderate and easy pollutants. Kinetic study for the oxidation rates will be investigated, the influence of different parameters such as (ph, Temperature, amount of catalyst, concentration of H₂O₂), and determine the optimum conditions of the process. Spectrophotometer methods will be used for the kinetic study, Electron spin resonance will be used for free radicals rule investigation, derivatives of the oxidation through the course of the reaction can be identified by Gas chromatographic methods.

Keywords: A.O.M., H₂O₂ , TiO₂ , sun light, wastewater treatment, heterogeneous catalyst, organic pollutants.

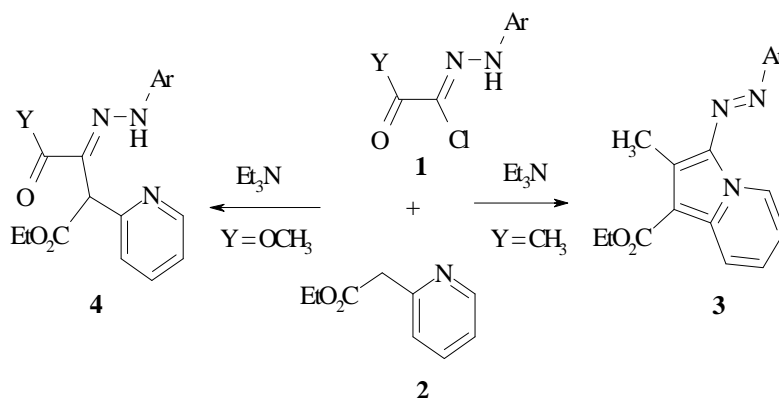
REACTION OF NITRILIMINES WITH 2-SUBSTITUTED AZA-HETEROCYCLES

Adel M. Awadallah

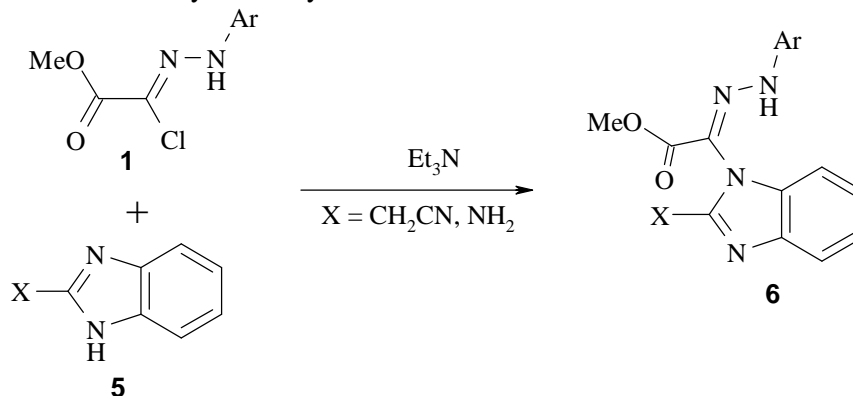
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Abstract

Reaction of nitrilimines **1** with ethyl 2-pyridine acetate **2** gave the fused heterocycles pyrrolo[1,2,a]pyridine **3**. On the other hand, the reaction of nitrilimines bearing an ester group yielded the acyclic adducts **4**.



Other acyclic adducts **6** were also prepared from similar reactions with 2-amino- and 2-cyanomethylbenzimidazoles **5**.



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GAS-PHASE RELATIVE STABILITY OF 2, 4-(OXO/THIOXO) DERIVATIVES OF 5-METHYLIMIDAZOLIDINE, DFT STUDY

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Abstract

The gas-phase relative stabilities and Gibbs tautomeric free energy for the different tautomers of 2,4-dione, 4-thio-2-oxo, 2-thio-4-oxo, 2,4-dithione derivatives of 5-methylimidazolidine were studied through the use of high level density functional theory (DFT) calculations. The structure of all possible tautomers and their conformers was optimized at the B3LYP/6-31(d) level of theory. The harmonic vibrational frequencies of the different stationary points of the potential energy surface (PES) have been calculated at the same level of theory used for their optimization in order to identify the local minima. Moreover, the isomerization processes leading from the most stable adduct to the other stable conformers were investigated. In order to obtain more reliable energies for the local minima, final energies were evaluated by using the same functional combined with the 6-311+G(2df,2p) basis set. The bonding characteristics of the carbonyl and thiocarbonyl groups depend on their relative positions. When these groups are attached to the carbon atom between two nitrogen atoms, the linkage is weaker than when they are attached to the carbon between C and N atoms. Among all the compounds, the 2,4-dithio are found to be the most stable tautomers in the gas-phase, while those of the 2,4-dioxo derivatives are found to be the least stable ones.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**INVESTIGATION OF THE IMPORTANCE OF THE NITROGEN
ATOMS IN THE IMIDAZOLE INHIBITORS FOR P38 MAP
KINASE**

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Abstract

The crystal structures of p38 kinase complexed with various pyridine-4-yl imidazole derivatives described so far contain a common set of features that can be exemplified by the binding mode of SB-203580: notably, the formation of a hydrogen bond between the backbone NH group of Met 109 in the linker region and the pyridine nitrogen of the inhibitor (figure 1)¹. Additionally, 4-flouropheryl ring binds to a hydrophobic pocket with walls formed with the N-terminal domain core at the back of the active site. The selectivity of these compounds for p38 MAP kinase has been attributed to this interaction, which is mediated by the presence of Thr 106 in the ATP-binding site. The crucial importance of both of the pyridine ring and the flouropheryl ring for the biological activity of these compounds was confirmed by many experiments. Still open to debate is the relevance of the hydrogen bond between N3 of the imidazole ring and Lys 53 of p38 MAP kinase. Although several studies indicate the imidazole ring as critical determinant for the binding of pyridinylimidazoles of p38 MAP kinase. Some authors suggest a role for the imidazole as scaffold for positioning the flouropheryl and pyridine rings. This debate clarifies the need of further investigations. The aim of our work is to prepare the same skeleton of such inhibitors without nitrogen atoms in the five-member ring.

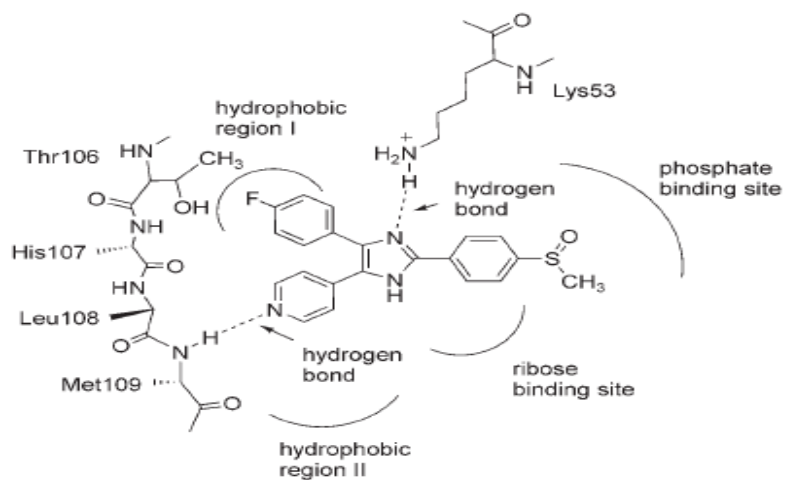


Figure 1. Important interactions between the prototypical pyridin-4-yl imidazole inhibitor SB-203580 and the ATP-binding site of p38; the hydrophobic area below the linker region is not occupied by SB-203580.

[1] S.A. Laufer, S. Margutti, M.D. Fritz, *ChemMedChem* **2006**, *1*, 197-207 and references therein.

التحليل الطبية

Medical Technology

ANTIMICROBIAL RESISTANCE OF BACTERIA ISOLATED FROM EAR DISCHARGE IN GAZA STRIP

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Areej Barakah (B.Sc Medical Technology), IUG

Maha Shaqalleh (B. Sc Medical Technology) IUG (Presenter)

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Souzan El-Heila (B.Sc Medical Technology) IUG

Abstract

The management of acute otitis media (AOM) is complicated by the emergence of resistance to beta lactams and other antibiotics among common pathogens. This research was conducted to evaluate the status of antimicrobial susceptibility of the common ear infection pathogen in Gaza. Ear swabs were collected from 102 patients visiting ENT units in AL-Shifa hospital, Alwosta Medical Center, Yafa Medical Center and Al-Aqsa Martyrs Hospital.

Microbiological cultures showed that 93.14% of patients are positive and the remains are negative. The most frequently isolated pathogen is from AOM patients were as follows; *Pseudomonas aeruginosa* (29%), *Staphylococcus aureus* (20.6%), *Proteus spp* (13.7), *E. coli* (6.9%), *Streptococcus spp.* (5.9%), *Serratia* (3.9%), *Klebsiella* (2.9%), *Moraxella* (2%), and other bacteria.

The composite of susceptibilities of these organisms; Meropenem showed the highest activity (98.9%) against both gram negative positive isolates. Gram positive isolates showed high resistance rates to Vancomycin (96.3%). Gentamycin showed (93.9%) effectiveness on gram-negative isolates. Bacterial isolates showed considerable variation in response to the other antibiotics used in this study. This high resistance rate among the isolated organism in Gaza strip may be due to poor sanitation, antibiotic misuse and abuse and other socioeconomic factors.

Keywords: *Ear infection, Antimicrobial resistance, otitis, Gaza*

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

VANCOMYCIN RESISTANT ENTEROCOCCI AMONG NON-HOSPITALIZED INDIVIDUALS IN GAZA CITY, PALESTINE

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Baha' Sh. Mosabbih (B. Sc Medical Technology)

Abstract

Vancomycin is a relatively small glycoprotein derived from *Nocardia orientalis*. Vancomycin is active against most G (+) bacteria. This antibiotic is sometimes the only antibiotic that can treat serious infections caused by some Enterococci. Enterococci occur almost everywhere, including soil, food, water, plants, animals, birds, and insects they inhabit in humans and other animal's gastrointestinal tract and the female genital tract. Vast amount of reports about the isolation of Vancomycin-resistant Enterococci VRE appeared in the literature. This study was conducted to investigate the occurrence of VRE among non-hospitalized individuals. One hundred non-hospitalized individuals were interviewed and stool sample was collected from each during the period between January and June, 2006. Isolation of Enterococci was performed according to standard method. Each Enterococcus isolate was subjected to vancomycin susceptibility test. We isolated 84 strain out of one hundred stool sample, 27% of them were resistant to vancomycin. No significant difference between male and female, level of education, hospitalization, age, regarding Enterococcus carriage or VRE. Higher percentage of VRE was observed among those who have been admitted to hospitals. A statistically significant correlation between the nature of work and Enterococcus was found ($P=0.038$).

Keywords; VRE, Enterococci, Gaza, antimicrobial resistance

TRENDS IN ANTIMICROBIAL RESISTANCE AMONG URINARY TRACT INFECTION PATHOGENS ISOLATED FROM CHILDREN IN GAZA, PALESTINE

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Hanan El-Modallal (B. Sc Medical Technology)
Heba Nofal (B. Sc Medical Technology) (Presenter)
Mariam Al-khawaja (B. Sc Medical Technology)

Abstract

Urinary tract is a target for infection by many microorganism including bacteria. The overall incidence of pediatric urinary tract infections (UTIs) is about 0.7% per person per year, making UTIs one of the most common diagnoses for pediatric patients. The treatment of UTIs is often complicated by the increasing antimicrobial resistance to the most common empirical Antimicrobials.

This work attempted to identify the common bacterial causes of UTI in Gaza Strip and their antimicrobial susceptibilities for the commonly used antimicrobials and risk factors associated with UTI. Urine samples were collected from patients attended at El-Nasser children hospital in Gaza strip. Microbiological cultures were made for each sample; the urinary tract pathogens were identified and their antimicrobial susceptibility determined. Of the 97 processed samples only 25 samples were recorded as positive (25.7%). The most frequent pathogens were gram negative enteric bacteria (76%) especially *E. coli* (40%) followed by *Enterobacter spp* (16%) *Klebsiella pneumoniae* (8%), *Proteus*, *Serratia* and *Xanthomonas* have the same percentage (4%). Gram positive bacteria also were isolated especially *coagulase negative* (CNS) *Staphylococcus* (16%) followed by *Staphylococcus aureus* (4%) and *Enterococcus* (4%).

The percentage of resistance for Gram negative bacteria to eight antibiotics were; *Amikacin* (84.2%), *Ceftizidime* (47.3%), *Nalidixic Acid* (89.4%), *Co-trimoxazole* (78.9%), *Pipracillin* (84.2%), *Amoxicillin* (94.7%), *Aztreonam* and *Tetracycline* as the highest (100%). For Gram positive bacterial resistance for four antibiotics were; *Tetracyclin*, *Erythromycin* and *Vancomycin* have the same percent (83.3%) and *Ampicillin* (100%).

Key words: *Antimicrobial resistance, UTI, Gaza*

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

SEASON OF THE YEAR AND INCIDENT OF STROKE AMONG PEOPLE IN GAZA GOVERNORATES

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Abstract

Seasonal variation in mortality from stroke has been of interest in several studies from different countries and climate areas. This study aimed to understand the relationship between seasonal pattern and development of stroke among hypertensive and diabetic patients with stroke. The study population consists of 220 subjects (80 females and 140 males) with stroke and history of hypertension and diabetes mellitus between the age of 40 to 75 years in the three geographic areas of Gaza Strip from the period of 1 January until 31 December 2004. All available discharge data of patients from the Disease Registry Office, and the three main governmental hospitals in Gaza governorates (Shifa, Nasser, and European Hospital) were screened for cases. A structured self report questionnaire was used in this study by writing personal information and the date of stroke occurrence from the discharge paper. Descriptive statistic and frequency distributions was generated to make a comparison between the four seasonal pattern and development of stroke. The results of the study indicate that forty percent (40%) of the patients developed stroke in winter time, 32 % in summer, 20% in autumn, and 8% in spring. In addition, the result showed that winter time is a risk factor for development of stroke as evidence by (OR = 3.03, CI 1.8 - 4.2)

It is concluded in this study that season of the year (Winter time) is strongly linked with incident of stroke among patients with stroke and history of hypertension and diabetes mellitus only.

**RELATIONSHIP BETWEEN DURATION TIME OF SYSTEMIC
ARTERIAL HYPERTENSION AND PLASMA BRAIN
NATRIURETIC PEPTIDE**

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Abstract

Background: Brain (b-type) natriuretic peptide (BNP) is a peptide hormone released primarily from the cardiac ventricles in response to myocyte stretch. The plasma concentrations of brain natriuretic peptide (BNP) become increased in hypertension. However, it is unknown what is the effect of the duration time of hypertension on the plasma concentrations of BNP. We hypothesized that duration time of systemic arterial hypertension would cause change in circulating BNP levels.

Methods: A prospective study was conducted on 95 subjects. 75 patients were hypertensive and 20 subjects were normotensive, who came to outpatient clinic of Shifa Hospital in Gaza Strip. BNP (MEIA Axsym Technique) and blood pressure were measured for each subject. Hypertensive patients were divided into 4 groups, based on duration time of hypertension. (2-4 years, 5-7years, 8-9 years and over 10 years).

Results: The mean of BNP levels in normal subjects was 9.7 pg/ml, in comparison to 69.3 pg/ml among hypertensive patients with ($P= 0.001$). The mean BNP levels In hypertensive subgroups: (2-4 years, 5-7years, 8-9 years and over 10 years), were : 64.2 ± 61 , 64.5 ± 63.5 , 70.9 ± 57.6 and 79.6 ± 70.6 , respectively with ($P = 0.85$).

Conclusion: Patients with systemic arterial hypertension have significantly higher plasma levels of BNP than normal subjects. However no significant relation between circulating levels of BNP and duration time of hypertension was found.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

HEMATOCRIT EFFECTS ON PARTICULATE SUSPENSION BLOOD FLOW IN STENOSED ARTERIES

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Abstract

A study of blood flow in an arterial segment having a stenosis is discussed. An axisymmetric flow of blood through a circular tube with an axially symmetric stenosis is considered. The governing equation is then solved using numerical integration. In this investigation, we observe the effects of red cell concentration (hematocrit) on blood flow characteristics in the presence of stenosis, and it is found that the flow resistance and the wall shear stress increase with hematocrits.

Keywords: Stenosis, Blood flow, Hematocrit.

AMS subject classification (1991): 76z

المؤتمر الدولي للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

EFFICACY OF DIPHTHERIA AND TETANUS VACCINATION IN GAZA STRIP

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Abstract

Vaccination is a preventive strategy in fight against infectious diseases and it is one of the most effective weapons of health protection of the modern medicine. Hence, it is necessary to continuously monitor the efficacy of vaccination programs. This study focused on the evaluation of effectiveness and usefulness of vaccination against diphtheria and tetanus in different age groups in Gaza Strip. Blood samples were collected from 180 children below 12 years age, 90 males and 90 females, children were classified into 3 age groups; (2-4y), (7-8y) and (11-12y) respectively. Diphtheria and tetanus antitoxoids were measured in serum samples using Enzyme Linked Immunosorbent Assay (ELISA).

The study showed that the efficacy of diphtheria and tetanus vaccination among children below 12 years in Gaza was 87.8% and 98.3% respectively with a significant difference in efficacy among age groups. The study showed also that the mean titer of antibodies varies significantly among age groups (0.239, 0.632 and 0.460 IU/ml for diphtheria) and (1.00, 2.62 and 1.20 IU/ml for tetanus). There was no significant difference between male and female in vaccine efficacy. This study indicates that vaccination against tetanus was highly effective while it was less effective for diphtheria. Antibody titers in the vaccinated group were relatively low for both diphtheria and tetanus, which means that vaccination offers a short term protection, antibody level and vaccine efficacy decline over time and there is a need for Td booster dose.

Keywords: diphtheria, tetanus, efficacy, booster dose, antitoxoid

LEPTIN AND SOLUBLE LEPTIN RECEPTOR AMONG OBESE PATIENTS IN THE GAZA STRIP

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Abstract

Leptin is a lately detected adipocytes derived protohormone. It plays an important circulating signal for the regulating body weight. Soluble leptin receptor (OB-Re) makes up the main binding compound for leptin in the blood plasma. This study aimed to ascertain whether an association exists between leptin and OB-Re among obese individuals in the Gaza Strip. Study sample was convenience one and obtained from two biggest obesity clinics in the Gaza strip. It consisted of 83 obese individuals without history of other diseases (case group). Control group consisted of 83 eligible normal weight individuals that were selectively chosen from the same clinics. Self reported structure interview and serum blood sample were obtained from the both groups. Human leptin and soluble leptin receptor were determined by competitive ELISA kits. Logistic Data were analyzed by SPSS WIN. The results showed a significant positive correlation between body mass index (BMI) and leptin hormone among the case individuals ($r = 0.64$, P -value < 0.001). In contrast, the results showed that OB-Re has inverse statistical relationship with BMI for the same individuals ($r = -0.26$, p value $= 0.017$). The results, surprisingly, showed no significant correlation between OB-Re and leptin among the case individuals ($r = -0.16$, p value $= 0.14$). For the case individuals, the leptin was also significantly higher ($t = -4.2$, p value $= 0.00$) for the females (mean = 72.4 ng/ml) than for the males (mean = 44.05 ng/ml). On the other hand, for the same individuals, OB-Re was slightly higher for the females (mean = 9.75 ng/ml) than for the males (mean = 8.91 ng/ml) which was not statistically significant. Serum leptin, cholesterol, triglyceride and LDL-c levels were increased with increasing BMI. Conversely OB-Re and HDL-c were decreased with increasing BMI.

Keywords: leptin, soluble leptin receptor, obesity, the Gaza Strip.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**DETECTION OF *CHLAMYDIA TRACHOMATIS* AND
MYCOPLASMA SPP IN PATIENTS WITH STERILE PYURIA IN
GAZA, PALESTINE.**

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Abstract

Background

Chlamydia trachomatis and *Mycoplasma* spp are associated with various diseases of the urogenital tract, but they are usually not detected by routine microbiological diagnosis.

Objectives

To determine occurrence of *Chlamydia trachomatis* and *Mycoplasma* spp in urine.

Design

Sterile pyuria samples, February -September 2006, tested by PCR for *C. trachomatis* and *Mycoplasma* spp.

Samples

From 100 patients (51 male, 49 female) aged > 18 years.

Results

C. trachomatis and *Mycoplasma* spp were detected in 12% and 5% of the specimens, respectively .

Conclusion

PCR testing of sterile pyuria shows a significant number of *C. trachomatis* and *Mycoplasma* infections. PCR can be performed to detect a significant proportion of cases.

**BIOCHEMICAL CHANGES ASSOCIATED WITH NUTRITIONAL
RICKETS AND ITS RELATION TO RISK FACTORS AMONG
CHILDREN IN GAZA STRIP**

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Abstract

The current study was carried out to investigate the biochemical changes associated with rickets and to assess the relationship between vitamin D and rickets risk factors. The study population comprised 87 ricketic children (< 36 months) taken from Al-Shatea clinic (a referral health facility catering for children from Gaza Strip for rickets) and 80 healthy control children matched with cases for sex, age, locality and socioeconomic standards. Data were obtained through questionnaire interviews held with children' parents and from blood analysis. The mean level of serum vitamin D in rachitic children (17.4 ± 14.0) was significantly lower than that in controls (56.1 ± 19.5). In general, there were significant differences in the mean levels of other biochemical parameters between control and cases, respectively as follows: calcium 9.4 ± 0.6 , 9.5 ± 1.3 ; phosphorus 6.8 ± 1.5 , 3.9 ± 1.2 ; alkaline phosphatase 169.0 ± 63.4 , 1233.4 ± 831.8 ; parathormone 48.1 ± 18.7 , 329.2 ± 275.1 ; hemoglobin 10.8 ± 0.5 , 10.4 ± 1.1 and cholesterol 161.0 ± 34.8 , 131.7 ± 24.6 . Analysis of the relationship between serum vitamin D and rickets risk factors showed lower vitamin D levels among children who had prolonged breastfeeding with less formulated food rich in vitamin D. Lower vitamin D levels were also found with increasing number of deliveries and lacking of sunlight exposure. The study provides hints for implementing strategies that could contribute in prevention of rickets in the Gaza Strip.

Key words: Nutritional rickets, biochemical changes, risk factors, Gaza Strip.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

A COMPARATIVE PHARMACOKINETIC STUDY OF TWO MARKETED CIPROFLOXACIN TABLET FORMULATIONS

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Abstract

Bioequivalence studies of two ciprofloxacin conventional formulation was carried out on ten healthy male volunteers. The study was randomized, with two-way crossover design. The agar plate diffusion technique was applied for the assay of ciprofloxacin and plasma drug levels was used as a parameter. In vitro studies, it was show that the two tablet formulation, were pharmaceutically equivalent. In vivo studies, pharmacokinetic parameters, such as geometric mean C_{max} , geometric mean T_{max} , geometric mean AUC_{0-12} and plasma half time $T_{1/2}$ were determined and subjected to statistical analysis. No significant difference in the rate or extent of absorption wDs observed between the two products. Therefore, the two marketed ciprofloxacin tablet formulations are considered bioequivalent.

**TRICHONAMAS VAGINALIS INFECTION AMONG
PALESTINIAN WOMEN: PREVALENCE AND TRENDS
DURING 2000-2006**

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Abdel Monem H. lubbad, Medical technology dept., IUG

Abstract

Aim: *Trichomonas vaginalis* has not been studied in Gaza and there is no available data on the prevalence of this sexually transmitted disease (STD). The objectives of this study were to determine the prevalence of *Trichomonas vaginalis* (*T. vaginalis*) among Palestinian women attending a child and mother care center in Gaza, Palestine and to estimate the trend of prevalence over the period from 2000-2006.

Materials and Methods: A cross-sectional descriptive study was conducted among 430 pregnant women attending a child and mother care center in Gaza. The clinical and gynecologic examinations were performed according to the complaints reported by each woman, especially infertility. Vaginal and cervical swabs were collected and stained with Papanicolaou (Pap) stain.

Results: Out of 423 women, a total of 77 were found to be infected with *T. vaginalis*, for a prevalence of 18.2%. A decrease in the prevalence of *T. vaginalis* was observed with increasing age. A significant association between vaginal discharge and *T. vaginalis* infection was found ($P = 0.001$). No clear trend was noted in the prevalence of *T. vaginalis* over the period from 2000-2006.

Conclusions: A considerable prevalence of *T. vaginalis* was found among pregnant women in Gaza. These results may be useful for health authorities, especially for antenatal care and protection against STDs.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**DIAGNOSTIC PROCEDURES FOR INTESTINAL PARASITES:
PHYSICIANS AND MEDICAL LABORATORY TECHNOLOGISTS
POINT OF VIEW, GAZA, PALESTINE**

Adnan Al-Hindi, Biology dept., IUG

Abstract

Objective:

This study aimed to evaluate the opinion and practice of physicians and medical technologists towards the diagnostic procedures of intestinal parasites; protozoa and helminthes in Gaza.

Methods:

A cross-sectional study was carried out in the five governorates of Gaza Strip. The convenience sample was 411 from Gaza Strip; physicians and medical laboratory technologists (MLT) . A designed questionnaire was included 18 questions from physicians and 18 for MLT.

Results:

371 questionnaires were completed for the physicians and MLT who participated in the present study, giving a response rate of 90.3%. It was found that (57.8%) of physicians were depending on the direct smear microscopy for intestinal parasites diagnosis. 20% of them were satisfied on diagnosis and result of stool sample in case of negative results. 34.1% of physicians were depending on stool examination for *Enterobius vermicularis* diagnosis and (25.9%) were requesting advanced techniques like antigen detection and DNA based techniques. It was **concluded** that attitude towards diagnosis of intestinal parasites using direct smear microscopy was high. It is **recommended** to do more training for MLT in Gaza and searching for suitable applicable methods for intestinal parasites diagnosis.

البصريات الطبية

Optometry

LOW VISION IN PALESTINE (GAZA STRIP) A REAL MEDICAL & SOCIAL PROBLEM

Assad Yosef
Islamic University of Gaza

Abstract

Introduction:-

Low vision describes a level of visual impairment characterized by useful residual vision that is less than normal.

Loss of vision is not blindness which is the total absence of any useable vision.

Visual impaired (handicapped) person in Palestine is of the most marginalized person, where the primary health care is very low, and a high percentage of visually impaired children's could delay their educational ability.

According to the latest statistics there are a high percentage of consanguinity congenital and inherited conditions that are reflected on the visual functions leading to its impairment.

Aim:-

The study was conducted to provide a general overview about visual impairment especially low vision in Gaza strip, and to highlight the importance role of the optometrists in the evaluation, diagnosis and management of such eye related conditions, through providing appropriate optometric low vision systematic approach to improve the patient's visual functions with reference of the patient's visual demands, needs and adjustments to loss of vision.

Methods and materials:-

This practical study which is a retrospective in nature was done in Gaza strip regarding visual impairment with statistical view in the following centers, which was a part of the requirements of Bachelor degree in optometry :-

- 1- Al NOOR Centre for visual impaired Rehabilitation.
- 2- ATC (Assistive Technology Centre) IUG.

Results and conclusions:-

All the results of the study will be discussed in details on the basis of highlighting a review of Low Vision with diagrams or figures.

All the results are evaluated according to World Health Organization, American optometric organization and American Academy of Ophthalmology concentrating on basic aspect, methods of examinations principles of evaluation & management.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**IN THE FIELD OF BIOMEDICAL SCIENCES
PHYSICS OF CATARACT REMOVAL USING ULTRASONIC
ENERGY**

*Dr Kamal J Okasha MD,PhD
St. John Eye Clinic
Abstract for free paper presentation*

Abstract

AIM; The purpose of the study is to discuss the mechanism of cataract removal using ultrasound energy, and evaluate the efficacy of using this energy in eye surgery . METHODS; 100 operations were done using this technology at St. John Eye Center in Gaza. The amount of total energy delivered to the eye were measured

The correlation between the amount of energy and the results were evaluated

RESULTS; the energy delivered to the eye did not exceed the maximum limit.

All patients had good results. No complications related to ultrasound energy were encountered.

CONCLUSION; Ultrasound energy can be used safely in eye surgery and allow more efficient cataract removal.

DEVELOPMENT OF REFRACTIVE SURGERY

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Abstract

Refractive surgery is any surgery used to improve the refractive state of the eye and decrease dependency on glasses or contact lenses .

The most common methods today use lasers to reshape the cornea .

Successful refractive surgery can help to reduce such common vision disorders as myopia , hyperopia , and astigmatism .

According to surveys of members of the American society of cataract and refractive surgery (CRS) approximately 948,266 refractive surgery procedures were performed in the united state during 2004 , and 928,737 in 2005 .

The procedures to perform refractive surgery were developed during the past 20 years , the first attempt was the operation of radial keratotomy , and later the usage of laser technology to reshape the surface of the cornea .

According to the procedures used in the refractive surgery, the following are the most important :

1) Corneal incisions procedures :

a-The first was the radial keratotomy operation .

b- Arcuate keratotomy operation .

2) Photoablation procedures :(PRK) which reshape the cornea by destroying microscopic amounts of superficial corneal tissue by the excimer laser .

3) Flap procedures : include :

a- Lasik operation , the most common procedures, which means (laser assisted in situ keratomiliuses) .

b- Lasek operation , which means (laser assisted subepithelial keratomiliuses) .

4) Other procedures :

a-Thermal keratoplasty .

b-Laser thermal keratoplasty .

c-Conductive keratoplasty .

d-Intrastromal rings (intacs), for low degree of myopia .

e- Lens implant (phakic intraocular lens)

f- Clear lens replacement .

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

REFRACTIVE ERRORS IN PRIMARY SCHOOL CHILDREN IN GAZA –RESEARCH

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M.D ophthalmology

*Head of Optometry department in Islamic University of Gaza
and his students*

Sabry Hajaj

Montaser Mohessen

Tareq El Moghany

Tamer Dababesh

Abstract

A total number of 1447 children (2894 eyes) were investigated in this study. Overall, 2635 eyes (91.05%) were emmetropic and 259 eyes (8.95%) were ametropic.

The highest prevalence of refractive error was for astigmatism, 172 eyes (5.94%) from total number; followed by myopia, 49 eyes (1.69%) then hyperopia having the lowest prevalence, 38 eyes (1.3%).

For males, 1453 eyes (92.31%) were emmetropic and 121 eyes (7.69%) were ametropic, while for females, 1128 eyes (89.55%) were emmetropic and 138 eyes (10.45%) were ametropic. Table.6, Figure.11

From the total number (2894 eyes), compound myopic astigmatism had the highest prevalence, 75 eyes (2.59%); followed by mild myopia, 42 eyes (1.45%); followed by mild hyperopia, 33 eyes (1.14%); followed by mixed astigmatism, 29 eyes (1.0%); followed by compound hyperopic astigmatism, 25 eyes (0.86%); followed by mild simple myopic astigmatism, 15 eyes (0.52%); followed by mild simple hyperopic astigmatism, 11 eyes (0.38%); followed by moderate simple myopic astigmatism, 10 eyes (0.345%); followed by moderate myopia, 7 eyes (0.24%); followed by moderate simple hyperopic astigmatism, 4 eyes (0.14%); followed by high hyperopia, 3 eyes (0.103%); followed by severe simple myopic astigmatism and moderate hyperopia with the same value, 2 eyes (0.07%); followed by extreme simple myopic astigmatism, 1 eye (0.03%).

البصر والبصيرة في القرآن

محاضرة للدكتور محمد الطرشاوي / رئيس قسم البصريات الطبية

ما هو البصر؟

البصر أحد الحواس الخمس التي ندرك بها العالم حولنا نتأثر به ونؤثر فيه. والبصر حاسة الرؤية كوظيفة جسدية وحاسة الإدراك كأداة سلوكية فنحن لا نبصر الشيء أي نراه فقط ولكننا نكون سلوكاً معيناً نتيجة هذه الرؤية. وفي مختار الصحاح "بصير بالشيء أي علم به فهو بصير" ومنها قوله تعالى: (بصرت بما لم يبصروا به) والتبصر هو التأمل والتعرف والتبصير التعريف والإفصاح ومنه قوله (فلما جاءتهم آياتنا مبصرة) والإبصار لا يكون مجرد فعل ورد فعل وإنما يكون عملية تفاعل متكاملة. فنرى الشيء وندركه ونحلله ونكون عاطفة نحوه سلبية أو إيجابية ونسمى هذا الشعور حالة انفعال

0) ما هي البصيرة؟ البصيرة هي الحجة والاستبصار في الشيء

ونفاذ البصيرة يعني قوة الفراسة وشدّة المراس وقوة الحنكة والقدرة على تخطي العقبات الحالية بالخيارات السبّاقة المتراكمة بتطويعها وترويضها والاستفادة منها في رؤية حلول لمشاكل جديدة. وقد تطلق البصيرة على العلم واليقين، وقد تطلق على نور القلب كما يطلق البصر على نور العين.

قد يكون الإنسان ذا بصر حاذق لكنه ذو بصيرة قليلة ضعيفة، ولذا اعتبر القرآن أن رؤية البصيرة أهم بكثير من رؤية البصر وذلك في قوله تعالى: (فإنّها لا تعمى الأبصار ولكن تعمى القلوب التي في الصدور)

العلاقة بين البصر والبصيرة

- يطلق البصر على رؤية العين وتطلق البصيرة على رؤية القلب
 - فقوة إدراك القلب يطلق عليها البصيرة... وقوة النظر وسداده تطلق على البصر
 - قد يجمع الإنسان على اختلاف جنسه بين البصر والبصيرة وقد يفتقد أحدهما
- إن كثيراً من المآسي تكون نتيجة الهوة العميقة بين البصر والبصيرة بين رؤية الشيء والقدرة على إدراكه والصبر في تحليله و وسيلة التعبير عن هذا الشعور نحوه بالقول أو الفعل .
- ألا يمكن لكلمة واحدة أن تفسد علاقة سنوات أو حركة شاردة أن تهدم أركان أقوى الصلات هذه الكلمة أو ذلك الفعل قد سقط في الخندق الذي يفصل بين البصر والبصيرة .
- وما كل ذي عينين بالفعل يبصر و لا كل ذي كفين يعطي فيؤجر .

الرياضيات

Mathematics

SOME REMARKS OF BOHR'S PHENOMENON IN SEVERAL VARIABLES

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Abstract

Bohr's theorem states that holomorphic functions bounded by 1 in the unit disk have a power series $\sum c_k z^k$ such that $\sum |c_k z^k| < 1$ in the disk of radius $\left(\frac{1}{3}\right)$ (the so-called Bohr Radius).

Lev Aizenberg find the lower bound of the first type of Bohr Radius for the unit ball $B_p^n = \{z \in \mathbb{C}^n : \sum_{j=1}^n |z_j|^p < 1\}$ of complex Banach space

B_p^n , when $p=1$, and the lower bound when $2 \leq p < \infty$ is due jointly to

Dmitry Khavinson and Harold P. Boas. For the second type Lev Aizenberg find a lower bound for any complete bounded n-circular domain. Harold P. Boas find an upper bound that depends on logarithmic term for both types. In this article we progress a new upper bound that not depending on logarithmic term and smaller than the upper bound with logarithmic term.

Key words and phrases. Bohr Radius, power series, holomorphic function, Banach space, complete bounded n-circular domain.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**BACKGROUND SUBTRACTION USING NONPARAMETRIC
KERNEL
DENSITY ESTIMATION WITH OPTIMAL BANDWIDTH FOR
VISUAL SURVEILLANCE**

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Abstract

Visual surveillance is both a challenge scientific problem and an important application in computer vision. With increasing processor power, more attention has been given to developing real-time surveillance systems. Surveillance cameras are already installed in many locations such as highways, streets, homes and offices. The ability to detect and track people is a key element of such systems. Current systems archive huge volumes of video for eventual off-line human inspection. The automatic detection of events in videos would facilitate efficient archiving and automatic annotation.

In this paper we introduce a model for achieving sensitive detection of moving objects against cluttered backgrounds by using a multivariate kernel density estimator with Gaussian kernel and optimal bandwidth .

Keywords and phrases: Kernel density, multivariate density, color channels.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

SOLUTION OF MULTI-TERM FRACTIONAL DIFFERENTIAL EQUATIONS BY DIFFERENTIAL TRANSFORM METHOD

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Abstract

In this paper , a multi-term fractional order differential equation is considered as an initial value problem. The fractional derivatives are defined in the Caputo sense. The differential transform method is modified to solve this type of fractional differential equations where new theorems are proved. Some examples are considered, where the results are proved to be in a good agreement with previous results found in the literature.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**ON A SUBCLASS OF UNIFORMLY CONVEX FUNCTIONS
DEFINED BY DZIOK-SRIVASTAVA LINEAR OPERATOR**

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Abstract

In this paper we introduce a new subclass of uniformly convex functions with negative coefficients defined by Dziok-Srivastava Linear operator. Characterization properties exhibited by certain fractional derivative operators of functions and the result of modified Hadmard product are discussed for this class. Further class preserving integral operator, extreme points and other interesting properties for this class are also indicated.

(2000mathematics subject classification: 30C45, 26A33)

Keywords and phrases: Univalent functions, Starlike, Uniformly convex, linear operator.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**THE ASYMPTOTIC NORMALITY OF THE CONDITIONAL
QUANTILE ESTIMATED AT A FINITE NUMBER OF DISTINCT
POINTS**

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Abstract

The problem of estimating the quantiles of a conditional probability density function based on a sample of i.i.d. random variables $(X_1, Y_1), \dots, (X_n, Y_n)$ with a joint density function $f(x, y)$ has been considered by M. Samanta (1989). He has proposed nonparametric estimators of the conditional quantiles of Y for a given value of X , based on a random sample from the above distribution, and under some regularity conditions he has shown that the estimators are strongly consistent and asymptotically normally distributed.

In this paper, we will establish the joint asymptotic normality of the estimators of the conditional quantiles evaluated at a finite number of distinct points.

PRIMARY FINITY COMPACTLY PACKED MODULES

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Abstract

The concept of primary finitely compactly packed modules is defined. This concept generalizes the concept of primary compactly packed modules. We first find the conditions that make primary finitely compactly packed modules primary compactly packed. Also several results on primary finitely compactly packed modules are proved. In addition the necessary and sufficient condition for an R-module M to be primary finitely compactly packed are investigated.

TESTING FOR UNIT ROOT WITH STRUCTURAL CHANGE AN APPLICATION ON PALESTINIAN ECONOMIC MODELING

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Abstract

In performing unit root tests within time series econometrics analysis, special care must be taken if it is suspected that structural change has occurred. This study highlights key procedures used in testing for unit root and with structural changes. It applies these procedures on a specific modeling of Palestinian trade, using time series data covering the period 1968-1998. Mainly, these tests confirm the non-stationarity or unit root assumption of main trade determinants, a situation reflects a dynamic process in this case and hence invokes further dynamic investigation.

key words: Unit root tests, Structural changes,

Trade

, Trad

Trade Trade

,

Variance Estimation with Serially Correlated Disturbances in Regression Models

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Abstract

In problems concerning time series, it is often the case that the disturbances are, in fact, correlated. It is known that the Ordinary Least Estimator (OLS) may not be optimal in this context. Using computer simulations, we consider the robustness of various estimators, including estimated generalized least squares. We consider the estimates of the variance (or standard error) of the coefficient estimators produced by computer packages. Bias in these estimates can adversely affect inference. In particular, we generate models with a second order auto-correlated error structure, but consider the robustness of estimators based upon misspecified order. Surprisingly, we find that for the cases investigated, OLS (order zero) estimates outperform first order estimated generalized least squares. A full comparison of order zero, one, and four estimators indicate that over specification is preferable to under specification.

Key words: Auto-correlated; Disturbances; Ordinary Least Squares; Generalized Least Squares; Bias.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**FIVE PARAMETER LIE GROUPS AND JACOBI POLYNOMIALS
ASSOCIATED WITH HYPERBOLIC FUNCTIONS FOR CERTAIN
NEW GENERATING FUNCTIONS**

by

*M.B. Elkhazendar** and *T.O. Salim***

Abstract

In this paper we have considered five parameters Lie group for Jacobi polynomials involving suitable interpretation to the index and parameters of this polynomial in order to derive the element of Lie group. By means of this group theoretic method some new generating function for Jacobi polynomials involving hyperbolic functions are obtained from which several special generating functions can be easily devived.

RELIABILITY ANALYSIS OF ACYCLIC TRANSMISSION MULTI-STATE NETWORK (ATMN) WITH COMMON CAUSE FAILURE (CCF)

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Abstract

In this paper, we evaluate the reliability analysis of acyclic transmission multi-state network (ATMN) with common cause failure (CCF). The ATMN consist of a number of positions (nodes) in which Multi-state (MEs) capable of receiving and/or sending a signal is allocated. Each network has root position where the signal source is located, a number of leaf positions that can only receive a signal, and number of intermediate positions containing MEs capable of transmitting the received signal to some other nodes. The signal propagation is allowed only in direction of the terminal nodes, which avoid the cycle in the network. The signal transmission is possible only along links (lines) between the nodes. Each ME that is located in a non leaf node can have different states determined by a set of nodes receiving the signal directly from this ME. The MEs is located at some (second and third) non-leaf positions can be destroyed by an external impact (common cause failure) with a given probability. The signal transmission process is associated with delays. The system fails if the signal generated at the first position (source) can not reach the terminal nodes with in a specified time. This paper is based on a universal generating function (UGF) technique for solving ATMN reliability. The algorithm which is used in this paper for solving the minimal cost ATMN enhancement problem (ATMN reliability).

Keywords: Common cause failure, ATMN reliability, Multi-state element, Transmission speed, Universal generating function technique.

**STUDY OF PATTERN STORAGE TECHNIQUE IN SELF
ORGANIZING MAP USING HOPFIELD ENERGY FUNCTION
ANALYSIS**

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Abstract

The pattern storage for the continuum features of the pattern can be characterized with the self organizing map and Hopfield energy function analysis. The competitive learning for the self organizing map determines the feature mapping for the patterns with the continuum features. The iterations of the competitive learning between the input layer and the feedback output layer reduce the neighboring region in the processing elements of feedback layer. On each iteration of this learning, the states of the feedback processing elements changes. The energy function corresponding to these states are determined. The change in energy function decreases, it shows that the network is approaches towards the equilibrium state of the global stability. The minimum of the energy states represents the stored pattern. The network will able to encode the pattern information in the terms of feature space of the patterns. Thus the pattern having the same feature will belongs to the same equilibrium state. This mechanism will help to determine the feature mapping for any unknown input pattern as well as the any other prototype or noisy input pattern of the already stored pattern.

Key words: Pattern Mapping, Competitive Learning, Self Organizing Map, Hopfield Energy Function.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

MULTI-SEGMENT STEGANOGRAPHY TECHNIQUE

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Abstract

In this paper a new multi-segment steganography technique is proposed. The original image is divided into a number of segment equals to the number of character in the message. In this approach message is being hidden into images by coding the message and search the image about values that correspond to coded message and mark these positions, some criteria for choice of coding method explained. It's shown that the proposed technique is difficult to break.

Key words : Cryptography , Steganography

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

**ON CERTAIN CLASS OF ANALYTIC FUNCTIONS WITH
NEGATIVE COEFFICIENTS DEFINED BY FRACTIONAL
DERIVATIVE OPERATORS**

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Abstract

The present paper investigates a new class of analytic and univalent functions with negative coefficient in the unit disc U , involving certain fractional operators. Characterization and distortion theorems and other interesting properties of this class of functions are studied. Further class preserving integral operator and some closed theorems for this class are also indicated.

(2000mathematics subject classification: 30C45 26A33)

Keywords and phrases: Fractional derivative, analytic, univalent functions.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

IMPLICIT EULER METHOD FOR FRACTIONAL ORDER DIFFUSION EQUATION

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Abstract

Fractional order differential equations have shown to be adequate models for various physical phenomena in areas like damping laws, diffusion process, etc. In this paper, we propose an implicit stable and convergent practical numerical algorithm for solving one dimensional fractional diffusion equation. Implicit Euler algorithm is applied to a one dimensional fractional diffusion equations with variable coefficients on a finite domain. Consistency and (therefore) convergence of the method are examined.

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

PERISTALTIC TRANSPORT OF A MICROPOLAR FLUID IN A CHANNEL

By

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Abstract

Peristaltic Transport of a micropolar fluid in a uniform channel is studied with out any restrictions on the wave amplitude and the reynolds number. Perturbation method is used in terms of wave number () as a parameter is used to obtain analytic form for the velocity field, the microrotation components and the pressure gradient to the first order.

Moreover, the pressure rise and friction force have been computed numerically and the results are studied for various parameter of interest .

"ON SOME RECENT RESULTS RELATED TO HILBERT'S INEQUALITY"

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Abstract

Discrete and integral inequalities play an important role in almost all branches of mathematics, mainly in analysis and its applications. The following Hilbert's double series inequality and its integral analogue are under consideration. are sequences of real numbers such that (a_n) and (b_n) . If

$$0 < \sum_{n=1}^{\infty} a_n^2 < \infty \text{ and } 0 < \sum_{n=1}^{\infty} b_n^2 < \infty, \text{ then}$$

$$\sum_{n=1}^{\infty} \sum_{m=1}^{\infty} \frac{a_m b_n}{m+n} < p \left(\sum_{n=1}^{\infty} a_n^2 \sum_{n=1}^{\infty} b_n^2 \right)^{\frac{1}{2}}.$$

Suppose that f and g are real functions, such that

$$0 < \int_0^{\infty} f^2(t) dt < \infty \text{ and } 0 < \int_0^{\infty} g^2(t) dt < \infty,$$

then

$$\iint_0^{\infty} \frac{f(x)g(y)}{x+y} dx dy < p \left(\int_0^{\infty} f^2(t) dt \int_0^{\infty} g^2(t) dt \right)^{\frac{1}{2}}.$$

The constant factor p in both inequalities is the best possible. In this talk, I go through some of the recent generalizations of Hilbert's type inequality. In particular, I discuss some new improvements on the constant factor.

Key words : Hilbert's inequality, Beta function, Holder's inequality.
2000 Mathematics Subject Classification. 26D15

PRODUCT ORDER ON T_0 -ALEXANDROFF SPACES

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Abstract

It is known that if (p_1, \leq_1) and (p_2, \leq_2) are two posets, there exist two types of order on the set of Cartesian product $p_1 \times p_2$, the product order and the lexicographic order.

In Arenas paper, It is shown that if $(X, t(\leq_X))$ and $(Y, I(\leq_Y))$ are two T_0 -Alexandroff spaces together with their specialization order \leq_X, \leq_Y respectively, then the product space $X \times Y$ is T_0 -Alexandroff space. Using this result, an Alexandroff specialization order \leq_p is induced on the set of Cartesian product $X \times Y$.

In this paper, we investigate the new order \leq_p on $X \times Y$. We deal with the question under if the new order is the product order, lexicographic order or other. We prove that \leq_p coincides with the product order between the two poset (X, \leq_X) and (Y, \leq_Y) . We obtain some new results on the product space $X \times Y$ with the relation of the two spaces X and Y .

المؤتمر الدولي الثاني للعلوم والتنمية - الجامعة الإسلامية - غزة 2007م

SIMPLEX CODES OVER THE RING $F_2 + vF_2$

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Abstract

In this paper, we construct simplex linear codes over the ring $F_2 + vF_2$ of types α and β , where $v^2 = v$ and $F_2 = \{0, 1\}$. And we determine their properties. These codes are extension and generalization of simplex codes over the rings Z_4 , Z_6 and $F_2 + uF_2$ where $u^2 = 0$.

AMS Subject Classification2000: Primary 94B05, Secondary 11H71.

Key words: Simplex codes, $F_2 + vF_2$ -linear codes

**LINEARITY OF GREEDY CODES OVER THE FIELD Z_p AND
THE RINGS $Z_{2^s}, s > 0$**

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Abstract

In this paper we prove the linearity of greedy codes generated by using graded-lex ordering and greedy Algorithm for some value of the distance d over the binary field Z_2 and the field Z_p where p is an odd prime. We generalize the results over the rings $Z_{2^s}, s > 0$ and we get simplex code of type a over these finite chain rings.

Keywords: Linear codes, Greedy codes.

AMS Subject Classification 2000: Primary 94B27; Secondary 94B05.

2-QUASI- I -NUCLEAR SPACES

By

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Abstract

Let E and F be two arbitrary normed spaces. A linear map T from E into F is called 2-quasi- I -nuclear map if there exist a sequence (a_n) in I (I stands for a fixed sequence space contained in l_1) and a bounded sequence (a_n) in E' such that

$$\|Tx\| \leq \left(\sum_n |a_n| |\langle x, a_n \rangle|^2 \right)^{\frac{1}{2}} \quad \text{for all } x \text{ in } E.$$

In this paper we prove that if T is 2-quasi- I -nuclear map then T' is 2-quasi- I -nuclear map, the set of all 2-quasi- I -nuclear maps between normed spaces is an operator ideal and the product of any countable 2-quasi- I -nuclear maps is 2-quasi- I -nuclear map. Also we define what we call 2-quasi- I -nuclear space and prove that the direct sum of 2-quasi- I -nuclear spaces is 2-quasi- I -nuclear space.

BÄCKLUND TRANSFORMATIONS FOR FOURTH-ORDER PAINLEVÈ-TYPE EQUATIONS

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Abstract

In this article we study new forms of Bäcklund Transformations for fourth-order ordinary differential equations of Painlevè-type. We present an algorithm which allows the construction of Bäcklund Transformations between a given equation and a new fourth-order equation. The precise form of the new equations are also determined.

TOPOLOGICAL AND HEREDITARY PROPERTIES IN ISOTONIC SPACES

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Abstract

An isotonic space (X, cl) is a set X with isotonic operator $cl: P(X) \rightarrow P(X)$ which satisfies $cl(\emptyset) = \emptyset$ and $cl(A) \subseteq cl(B)$ whenever $A \subseteq B \subseteq X$. Many properties which hold in topological spaces hold in isotonic spaces as well.

We explore the topological concepts of lower separation axioms, higher separation axioms and connectedness for isotonic spaces, and we establish that they are topological and hereditary properties in isotonic spaces.

البيئة وعلوم الأرض

Environment and Earthsciences

STUDIES ON THE EFFECTS OF SALINITY ON SOME AGRICULTURAL CROPS IN THE SUDAN

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Abstract

The purpose of this study was to investigate the effects of the different salinity levels on growth and chemical constituents of some agricultural crops in the Sudan. The tested plants include Abu Sabeen, *Sorghum bicolor* var. sudanense (Stapf.) Hitchc., *Pennisetum americanum* (L.) Leeke, roselle, *Hibiscus subdariffa* L., okra, *Abelmoschus esculentus* (L.) Moench and purslane, *Portulaca oleracea* L. The plants were grown in five concentrations of NaCl and NaHCO₃ Salts ranging between 0.0-1.0% i.e. 0.0 - 177.0 mol m⁻³ NaCl; 0.0 - 190 mol m⁻³ NaHCO₃. With increasing salinity levels, both salts negatively affect the growth behaviour and the chemical composition of the tested plant: NaHCO₃ was noted to inflict more detrimental effects than NaCl. This is due to differences in the pH and ionic toxicities of the two salts. In general, the growth behaviour of the tested plants followed this sequence: *P. oleracea* showing the best response followed by *S. bicolor*, then *P. americanum*, *H. subdariffa* and *A. esculentus* respectively. The vegetative performance (i.e. height of the plants, number of tillers per plant, fresh and dry weights) was severely reduced by salt treatments, especially at high concentrations. Chloride and carbonate accumulations within the plants' tissues were correlated to salinity levels i.e. high accumulations coincides with high concentrations. The effects of NaCl on crude protein formation, and ash content were different from NaHCO₃: NaCl enhanced the production of more crude protein and ash, whereas NaHCO₃ slightly reduced both parameters, crude fiber content was decreased by NaCl and NaHCO₃. Symptoms related to salt injury such as leaf chlorosis, necrosis, leaf folding, leaf – tips and margins burning, shrinking and leaf shedding became increasingly evident with increasing salt concentrations.

Keywords: Salinity, agricultural crops, salt tolerance, Sudan

**BIODIVERSITY, CONSERVATION AND SUSTAINABLE
DEVELOPMENT ALONG THE RED SEA SALT MARSH, NORTH -
EASTERN SUDAN**

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Abstract

The ecological setting of the natural halophytic vegetation of the Red Sea Coast, North - Eastern Sudan has been investigated in the present study. The study covered the biodiversity, ecotaxonomical characteristics and the zonal pattern of the vegetation between the shoreline and the semi-desert plain. Eleven important plant communities have been recognized: *Avicennia marina* (Forsk.) Vierh., *Arthrocnemum glaucum* (Del.) Ung. Sternb., *Halopeplis perfoliata* (Forsk.) Bunge ex Aschers, *Aleuopus lagopoides* (L.) Trin. Ex Thw, *Zygothallum coccinium* L., *Sporopolus spicatus* (Val.) Kunth, *Suaeda monoica* Forsk, *Urochondra setulosa* (Trin). C. Hubbard, *Limonium axillare* (Forsk), *Atriplex farinosa* Forsk and *Z. album* L. f. Up to six monotypic stands were noted to occur along a sequence according to a salinity gradient from the water edge until the landward end of the salt marsh. This salinity gradient relates very closely to the distance from the tidal limits of the Red Sea. The local topography and biotic disturbance frequency are also important in determining the number of zones and their width. The halophytic plants with higher water affinities e.g. *A. marina* are more frequent in the southern regions of the salt marsh whereas those with lower water demands e.g. *L. axillare* occupy the northern parts. Although the coastal fringe is predominantly a saline environment, rainfall and runoff from the Red Sea Hills moderate the salinity and permit limited agricultural practices. Traditionally, such locations: wide valleys as rain water catchment areas and major seasonal streams “khors” in the region have been intermittently cultivated by the local people. Cropping the conventional grain “Dukhun” (*Pennisetum americanum*) had been a prosperous practice whenever there is sufficient rainfall. To a lesser extent, “Dura” (*Sorghum bicolor*) has been locally cultivated with varying degrees of success. Small land holdings were used to raise vegetables and pulses: tomatoes, (*Lycopersicon esculentus*), water melon (*Citrulus lanatas*), okra (*Abelmoschus esculentus*) and sweet beans (*Dolicus lablab*) as cash crops.

Signs of biodiversity losses and degradation are evident on the salt marsh vegetation and are associated directly or indirectly with population growth, unsustainable patterns of resource consumption and management and environmental changes. It appears that the impact of the Sahelian drought throughout recent years coupled with increasing biotic disturbance may account for diminishing of the halophytic stands.

Conservation strategies should be increased in number and effectiveness, particularly in light of increasing demand for natural resources products. Creating monitoring programmes and building quantitative databases for conservation will be essential to monitor the changes and assess future success in maintaining biodiversity. Public education to promote awareness and environmental legislations and regulations play a vital role in maintaining a healthy environment for biodiversity and sustainable development.

Keywords: Salt marsh, halophytic vegetation, biodiversity, conservation, sustainable development.

الواقع البيئي في الضفة الغربية (مشكلات وحلول)

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خطة الدراسة : أهمية وأهداف الدراسة - فرضيات الدراسة - مصادر الدراسة - منهجية الدراسة.
الخصائص الطبيعية: الموقع - الطبوغرافيا والجيولوجيا - المناخ - التربة - مصادر المياه.
الخصائص البشرية : توزيع السكان - الكثافة السكانية.
المشكلات البيئية في الضفة الغربية

أولاً : مشكلة التلوث

- 1- تلوث الهواء: المنشآت الصناعية- وسائط النقل والمواصلات- غبار النفايات الصلبة المحترقة- السياسة الإسرائيلية
- 2- تلوث المياه : التلوث بمياه الصرف الصحي - التلوث بالنفايات الصلبة - تلوث التربة - تلوث الضوضاء والضجيج.

ثانياً : التصحر وتعرية التربة

إزالة الغابات والرعي - انجراف وتملح التربة - الإفراط في الزراعة - المحميات الطبيعية.

ثالثاً: جدار العزل العنصري الفاصل.

- * - مصادر الأراضي الفلسطينية لأغراض الاستيطان
 - * - تشتت الجهود الفلسطينية المبذولة لحماية البيئة
- الخاتمة- نتائج الدراسة- التوصيات- المراجع

تطهير المياه العادمة المعالجة باستخدام التقنيات المغناطيسية

د. زاهر عدنان سالم / مدير دائرة مقترحات المشاريع
خبير بيئي في سلطة جودة البيئة

ملخص المحاضرة

تعد مسألة تعقيم المياه العادمة المعالجة بشكل فعال من أهم التحديات التي تواجه الفنيين و العاملين في مجال المعالجة لاسيما و أن تعقيم المياه و تطهيرها من الأحياء الدقيقة المختلفة و بالأخص بكتريا القولون البرازية هو مطلب رئيسي يحدد اتجاهات إعادة استخدام هذه المياه أو النقطة النهائية للتخلص منها.

توضح المحاضرة و بشكل متكامل طريقة حديثة ذات جدوى اقتصادية و إمكانية للتطبيق العملي لتعقيم (تطهير) المياه العادمة المعالجة باستخدام التقنية المغناطيسية، حيث أجريت التجارب العملية بتمرير المياه العادمة المعالجة بين قطبي مغناطيس معين ذا قدرة كهرومغناطيسية محددة و بسرعة تدفق محددة للمياه و تم فحص المياه قبل التمرير عبر قطبي المغناطيس و بعده و أشارت النتائج إلى التخلص التام و بنسبة مئة بالمائة من بكتيريا القولون البرازية و غيرها من المجموعات البكتيرية مما يثبت نجاعة هذه التقنية الحديثة المبسطة.

إن المحاضرة ستسلط الضوء على سلسلة التجارب العلمية التي تم إجرائها بحيث تم ضبط مقطع قطر أنبوب المياه و سرعة تدفق المياه إلى حين الوصول إلى النظام التشغيلي الأمثل بحيث يتم تعقيم المياه بنسبة مئة بالمائة. كما و تركز المحاضرة على العوامل التي قد تؤثر في فعالية التعقيم المغناطيسي من حيث وجود عنصر الحديد أو بعض الأيونات في المياه، كما سيتم شرح التفسير العلمي و آلية التطهير المغناطيسي.

إن هذه المحاضرة تعرض طرحا علميا و عمليا لتعقيم المياه العادمة بالتقنية المغناطيسية و بذلك تفتح المجال للباحثين و الدارسين و المهتمين لمواصلة البحث في هذا المجال، كما و تفتح المجال أمام دراسة إمكانية تبني هذه التقنية و تطبيقها في بلادنا.

أخيرا تجدر الإشارة إلى أن هذا البحث تم تنفيذه في جامعة و معهدا متخصصا للبحث العلمي في تكنولوجيا معالجة مياه الصرف الصحي في أوروبا.

إن هذا البحث الذي سبوجه المؤلف (الباحث) خلال المحاضرة، يعد ذو قيمة علمية كبيرة و يشكل مرشدا و حافزا جديا للباحثين و المختصين في هذا المجال.

إعجاز الرياح في القرآن الكريم

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ملخص البحث

الحمد لله والصلاة والسلام على رسول الله وبعد...
لقد اهتم القرآن الكريم بذكر إشارات إلى كثير من النظريات العلمية التي لم يستطع أحد أن يصل إلى حقيقتها وكنهها إلا في عصرنا الحديث ومن ذلك ذكر الرياح وما فيها من إعجاز ونظريات ومنافع كثيرة للبشر.
وحرصاً منا على الوقوف على بعض جوانب الإعجاز العلمي في القرآن الكريم وجهنا عنايتنا إلى هذا البحث الذي يتصل بالرياح وما يتعلق بها والتي قد تكون نعمة ونقمة.
ويشتمل هذا البحث على:

أولاً: المقدمة وفيها الحمد لله والثناء عليه وبيان أهمية البحث وسبب الاختيار
ثانياً: مصطلحات البحث: تعريف القرآن، والإعجاز، والرياح، والهواء ومكوناته وطبقات الغلاف الجوي، وأنواع الرياح، وعلاقتها بالضغط الجوي، وأجهزة قياس الرياح.
ثالثاً: آيات الرياح والإعجاز فيها:

- (1) طاقة الرياح وتحويلها إلى كهرباء.
- (2) دور الرياح في تلقيح السحب.
- (3) دور الرياح في البرق والمطر.
- (4) دور الرياح في تلقيح النبات.
- (5) دور الرياح في هلاك الأمم.

رابعاً: الخاتمة وتشتمل على أهم النتائج والتوصيات

RESOLUTION OF 2D TRIPOTENTIAL WENNER RESISTIVITY IMAGING OVER NUMERICAL DYKE MODEL

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Abstract

In order to map the area with complex subsurface geology where the conventional 1D resistivity sounding or profiling are inadequate, 2D resistivity imaging can be used. One approach used to interpret the obtained data is trial and error forward modelling for 2D earth model proposed using finite differences or finite element method.

Tripotential Wenner alpha apparent resistivity and the ratio beta/gamma pseudosections anomalies (Habberjam 1979, Acworth & Griffiths 1985) are found to give detailed information about the proposed 2D model and can be used to identify the model parameters.

The results shows that:

The pseudosections for conductive dike are simpler than those for the resistive dike models.

Wenner alpha pseudosections over a conductive outcropping dike show a simple contour shape and contour values greater than unity.

The ratio anomalies (high and low) are arranged in repeated cases over the outcropping resistive dike models and allow using this feature to be used for distinguishing the resistive and the conductive outcropping dike models.

For a conductive concealed dike model, Wenner alpha pseudosections do not show any significant information, whilst the ratio pseudosections show symmetrical anomalies over the dike position up to dike depth equal to $4x$.

For resistive concealed dike model both Wenner alpha and the ratio pseudosections show symmetrical anomalies over the dike position for all the model parameters. Therefore, distinguishing between conductive and resistive concealed dike models is done easily.

PERFORMANCE EVALUATION OF BEIT-LAHIA WASTEWATER TREATMENT PLANT AT THE NORTHERN AREA OF GAZA STRIP

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Abstract

Wastewater treatment plant at Beit Lahia and its partially treated effluent lake are considered the primary sources of pollution for the ground water and ambient environment. From February to May 2005, Field and laboratory tests were conducted and historical operating data were evaluated to assess the system performance in term of removal efficiency for the hybrid lagoon system. This study attempts to distinguish the factors leading to the inadequate performance of the BLWWTP in removing organic matter and nitrogen. The efficiencies of the different stages of the treatment and the global performance have been compared.

Collection and analysis of available historical data revealed a constantly decreasing removal of biochemical oxygen demand (BOD_5), chemical oxygen demand (COD), suspended solids (SS), and fecal coliform (FC). Analysis of data showed that the lagoon system removed 87%, 57%, 60 %, 20%, 13%, 16%, and 94.7% of the influent TSS, BOD_5 , COD, TKN, PO_4^{2-} , and FC respectively with an effluent concentration of 39 mg/L, 178 mg/L, 72 mg/L, 84 mg/L, 5.5 mg/L, and $2.04E+05$. The decreasing removal of pollutants appeared to be caused by increased hydraulic and organic load that exceeds treatment plant capacity, incorrect design that lead to inefficient hydrodynamics, and inadequate operation.

Over hydraulic and organic loadings, limitation of Oxygen supply and unavailability of DO, inadequate design of plant geometry and high facultative and maturation ponds depth are the main factors leading to inadequate treatment system performance. The study present suggestions like repositioning of inlets and outlets and/or adding baffles, micro-screen, and chlorination unit which can be introduced as short and simple solutions to overcome and improve partially the inefficiencies and poor treatment plant performance.

Key words: Wastewater treatment, Palestine Environment, Gaza Strip, Waste Stabilization System.

RECYCLING OF SOLID WASTE PROBLEMS AND SOLUTIONS

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Abstract

Solid waste includes domestic solid wastes (DSW), commercial waste, and agricultural wastes. Among the DSW, household solid waste (HHSW) is the remains of food basically from animal or plants such as grease, fats, bones, skin, meat, vegetables, fruits, grains etc. It also includes papers, textiles, glass and empty refreshment cans. HHSW also include restaurants and hotels wastes.

Commercial solid waste includes paper, cartons, wood, tires, used oils, used furniture and electronic appliances such as refrigerators and heaters etc., as well as construction and demolition (C&D) waste. The sources of commercial wastes are stores, commercial malls, markets and organization of the governmental and private companies. A close relation between individual income, rural or urban regions, consumer behavior as well as person's level was established by different authors.

The average typical composition of HHSW in Palestine consisted of 67.0 % organic matter, 8 % paper, 2 % textiles, 7 % plastics, 2 % glass, 2 % metals, sand 10% and 2 % others (% by weight). The total quantities of different solid waste generated are estimated over 300,255 tons/year and the average municipal solid wastes per each person are 1.0 Kg/day. Figures refer to year 2000.

Recycling is transforming of waste materials into secondary raw materials for manufacturing new products and it could be an expensive business for commingled waste from sites of low population density. Thus, recycling of solid waste is most economical where large quantities of recyclable materials are available within a small area (such as in a large city) or if the source of the waste is a commercial activity which may deliver less impure waste.

The collection and transport (“waste logistics”) of waste is expensive and has a big influence on the economy of the operation. In some developed countries, waste logistics consumes more than 70 % of the overall waste deposition costs. Therefore, there is huge cost saving potential in the proper design of the waste logistic system!

An important parameter in the design of waste management systems is the *density* of the waste. The logistic, storage facilities and landfills are volume-controlled, but the utilization, recycling and marketing of valuables is mass-controlled. Hence, the density provides the coupling factor between volume and mass controlled operations and systems. Today, compaction of waste along the logistic chain as well as transfer stations are two of the mostly applied methods for cost reduction.

In modern waste disposal systems, a waste processing operation is placed between collection/transportation and landfills aiming at recovery of valuables *and* preparation of the remaining waste for land-filling. The latter focuses on reduction of the biodegradability of the waste mainly, and may include simple aerobic rotting processes.

Because of limited recycling facilities and for seek of more individual initiatives, reduction of waste generation and at source reduction are assumed to have high importance for waste materials that are now typically discarded. Independent whether individual or private or governmental activities are employed, the most important pre-requisite for recycling is the existence of a corresponding domestic or international market for the valuables. This market needs to be created by the help of officials. Only this market is able to provide financial incentives and to make recycling attractive. Typical valuable for recycling are aluminum, paper and cardboard, glass, ferrous and other nonferrous metals, textiles. Other waste constituents like construction and demolition wastes, waste oil, tires, lead-acid batteries, household batteries and hazardous waste should be collected separately and should be left to qualified industrialized recycling companies. The organic fraction is recyclable only if separately collected!

The final conclusions and recommendations in this paper will give a systematic and structural approach the waste managements *systems*.

The most important factors that influence the amount of recycled materials generated in the Gaza Strip are of economic and political nature. The PNA and the legislative Council have an important role in increasing awareness through the national campaign and legislation and taking leading steps by using recycled materials and products in their premises.

SOURCES OF ADSORBABLE ORGANIC HALOGENS (AOX) IN SLUDGE OF GAZA

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Abstract

Two studies conducted in 2004 and 2005 showed elevated concentrations of adsorbable organic halogens (AOX) in sludge from Gaza Strip, total concentrations reached 600 mg/kg, and these values represent a major limiting factor for sludge application in agriculture. Consequently, this study aims to identify the main sources of AOX in the sludge of Gaza where the area is small with limited industrial activities. Field surveys of AOX producing industries and the Gaza central wastewater treatment plant were conducted. The treatment plant consists of inlet chamber, sedimentation ponds, anaerobic ponds, aerobic ponds, effluent polishing sedimentation pond. The treatment steps were followed and wastewater/sludge samples were collected for AOX determination. The AOX in effluent sludge is formed mainly inside the treatment plant. Although the plant receives AOX wastewater of only 85 µg/l, this value increased five fold inside the plant and the wastewater effluent has AOX concentrations of 400 µg/l. On the other hand, the sludge from the first sedimentation pond showed AOX concentration of 213 mg/kg which dropped to 39 mg/kg in the second sedimentation pond. The three anaerobic ponds increased the AOX in the sludge gradually from 270, 280 to 356 mg/kg, respectively. When the sludge enters the aerobic pond the AOX decreased to its minimum of 24 mg/kg followed by an increase in the final sedimentation pond to reach 500 mg/kg. The sludge treatment facilities are absent and the sludge produced is exposed to the sun and then accumulated and transferred to dumping sites. The AOX concentration in the sludge three months old was 130 mg/kg. The textile and detergent industries are the major AOX producing industries in Gaza, with an average AOX of 40,000 µg/l in their effluent. These values do not represent an AOX pollution load to the treatment plant because these industries are very limited and their effluents are much diluted before entering the municipal treatment plant. Industrial activity has decreased in 2006 to less than 70% compared to the previous four years. Consequently, the AOX in the industrial effluent decreased from 150 to 40 µg/l over the

same time period. In fact, sludge from these industries showed 1300 mg/kg AOX for the past four years and only 400 mg/kg for the year 2006. Moreover, the AOX in the influent wastewater to the treatment plant decreased from 320 to 85 $\mu\text{g/l}$ for the same period. The study revealed that the AOX is formed inside the treatment plant and especially in the anaerobic facilities. There was no correlation between the AOX concentrations in the sludge and the wastewater of the same location.

Key words: AOX, Gaza Strip, Wastewater Treatment Plant

ELEVATED NITRATE LEVELS IN THE GROUNDWATER OF THE GAZA STRIP: DISTRIBUTION AND SOURCES

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Abstract

Nitrate is one of the major groundwater pollutants of the Gaza Strip. Recent observations revealed that a high positive correlation was found between the concentrations of NO_3^- (>80 mg/l) in groundwater of the Gaza Strip and the occurrence of methemoglobinemia in babies younger than six months of age. Among 640 babies investigated in Gaza, 50% showed signs of methemoglobinemia in their blood samples. The objectives of this research were to study the concentration and distribution of NO_3^- in the groundwater of the Gaza Strip and to identify the sources of NO_3^- in the Gaza aquifer system by application of nitrogen and oxygen isotopes. Monitoring of NO_3^- levels in 94 groundwater wells for the last four years revealed that 90% of the wells have NO_3^- concentrations that are several times higher than the WHO standards of 50 mg/l. Potential NO_3^- source materials in Gaza are synthetic NH_4 based fertilizers, animal manure N, and wastewater/sludge. The average concentration of N in sludge, manure and soil of Gaza was 2.9%, 1% and 0.08%, respectively. The average $\delta^{15}\text{N}$ of solid manure samples was +11‰ (AIR). Five brands of synthetic fertilizers commonly used in Gaza had average $\delta^{15}\text{N}$ values of +1‰ (AIR), while the average $\delta^{15}\text{N}$ -values for sludge samples was +5‰ (AIR). For both $\delta^{18}\text{O}$ and $\delta^{15}\text{N}$ the average values of groundwater NO_3^- were + 10‰ (SMOW) and +10‰ (AIR), respectively. No significant bacterial denitrification is taking place in the Gaza Strip aquifer. Nitrate was predominantly derived from manure and to a lesser extent from wastewater and sludge.

Key words: Gaza Strip, Nitrate, Nitrogen/Oxygen isotopes.

واقع البيئة البحرية في قطاع غزة و دور الإسلام في تعزيز حمايتها

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المخلص

لقد أنعم الله سبحانه وتعالى على الإنسان بنعم كثيرة لا حصر لها في البيئات البحرية، وبالذات في هذا العصر الذي نعيش فيه حيث تطورت الصناعات مما يسر على الإنسان سبل الإبحار و التنقل و السياحة و الصيد السمكي و استغلال الثروات الهائلة المختلفة التي سخرها الله سبحانه و تعالى في البحر لينعم الإنسان بها و يشكر المولى عز و جل على ما رزقه منها مصداقاً لقوله تعالى (وَهُوَ الَّذِي سَخَّرَ الْبَحْرَ لِتَأْكُلُوا مِنْهُ لَحْمًا طَرِيًّا وَتَسْتَخْرِجُوا مِنْهُ حَبْلًا حَلِيَّةً تُلْبَسُونَهَا وَتَرَى الْفُلْكَ مَوَآخِرَ فِيهِ وَلِتَبْتَغُوا مِنْ فَضْلِهِ وَلِعَلَّكُمْ تَشْكُرُونَ). و لكن الإنسان و مع التقدم العلمي بادر بالتفريط في استخدام الثروات البحرية وأساء التصرف في التعامل معها و لم يحافظ على استدامتها و عمل على تلويث البيئات البحرية و الشاطئية فأذى البيئة البحرية وأضر بالناس و بالتنوع الحيوي البحري الذي خلقه الله سبحانه وتعالى وسخره له من أجل أن يعمر هذه الأرض، لا أن يفسد فيها ويهلك الحرث والنسل (ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ أَيْدِي النَّاسِ لِيُذِيقَهُمْ بَعْضَ الَّذِي عَمِلُوا لَعَلَّهُمْ يَرْجِعُونَ). و إذا كان الاهتمام بالبيئة البحرية ملحا عالميا فإنه يصبح أكثر إلحاحا في قطاع غزة حيث تعاني البيئة البحرية و الشاطئية الويلات نتيجة العبث بها و تلوثها و سوء إدارتها من قبل الناس و صيادي الأسماك، فقطاع غزة (365 كم²) يعج بكثافة سكانية عالية جدا و يعمل أكثر من 2500 صياد على ساحل لا يتعدى طوله 40 كم و في مساحة بحرية ضيقة لا تتعدى 660 كم² حسب الاتفاقيات السياسية الموقعة مع الكيان الصهيوني في المحافل الدولية و يلجأ الصيادون إلي تكثيف جهد الصيد بكافة السبل و الوسائل للحصول على إنتاج سمكي وفير دون الاكتراث بالنواحي البيئية الناجمة عن هذا النشاط على الموارد السمكية و البيئة البحرية التي تعاني منذ عقود من تدهور متزايد يدق ناقوس الخطر.

تهدف هذه الدراسة إلى تحديد المهددات التي تواجه البيئة البحرية و الثروة السمكية في قطاع غزة و ذلك من خلال الملاحظات الميدانية و اللقاءات مع الصيادين و السكان كما و تهدف إلى وضع مقترحات ممكنة تسعى لتحسين واقع البيئة البحرية و الثروة السمكية مشيرة إلى بعض الحلول الإسلامية التي تعج بها الشريعة الغراء في تناول هذا الجانب. أظهرت الدراسة العديد من العوامل التي تعترض البيئة البحرية و الصيد السمكي في قطاع غزة متمثلة بإلقاء المياه العادمة و طرح النفايات الصلبة متعددة المصادر في البيئة البحرية و تغيير ملامح ساحل البحر و بناء المنشآت العشوائية التي تقذف بنفاياتها على الشواطئ فتلوثها و تدمير الأعشاش البيئية للسلاحف البحرية المهدة بالاختفاء عالميا و ضعف البنية التحتية للصيادين و المؤسسات الخدمتية ذات العلاقة بالصيد البحري و التسويق السمكي و الصيد الجائر باستخدام معدات و وسائل صيد غير ملائمة بما فيها المبيدات الكيميائية حيث تهلك أشكال الحياة البحرية و لا تحمي صغار السمك و عدم مراعاة الصيادين لفترات الصيد و لبيولوجية و بيئة العشائر السمكية المتنوعة و يضاف إلى ذلك كله القيود و الانتهاكات العسكرية الإسرائيلية المتمثلة بالتحكم بمناطق الصيد السمكي و إغلاق البحر أمام الصيادين و المطاردات الزورقية و الاعتقالات للصيادين. و في الختام، نقتراح الدراسة ضرورة وقف مصادر التلوث البحري و التعديت (وَلَا تَقْسُوا فِي الْأَرْضِ بَعْدَ إِصْلَاحِهَا وَادْعُوهُ خَوْفًا وَطَمَعًا إِنَّ رَحْمَتَ اللَّهِ قَرِيبٌ مِّنَ الْمُحْسِنِينَ) و ضرورة تحسين البنية التحتية لقطاع الصيد و الصيادين و تحسين مستوى التعاون بين المؤسسات المختلفة و وسائل الإعلام (وَتَعَاوَنُوا عَلَى الْبِرِّ وَالتَّقْوَىٰ وَلَا تَعَاوَنُوا عَلَى الْإِثْمِ وَالْعُدْوَانِ وَاتَّقُوا اللَّهَ إِنَّ اللَّهَ شَدِيدُ الْعِقَابِ) بما يكفل إدارة و تنمية البيئة البحرية و الثروة السمكية بشكل مستدام يمدنا بالطيب من المأكَل (يَسْأَلُونَكَ مَاذَا أُحِلَّ لَهُمْ قُلْ أُحِلَّ لَكُمُ الطَّيِّبَاتُ) و النفيس من الثروات و الخيرات (وَمِن كُلِّ تَأْكُلُونَ لَحْمًا طَرِيًّا وَتَسْتَخْرِجُونَ حَبِيَّةً تَلْبَسُونَهَا وَتَرَى الْفُلْكَ فِيهِ مَوَآخِرَ لِنَبْتِغُوا مِن فِضْلِهِ وَلِعَلَّكُمْ تَشْكُرُونَ)، و إلى ضرورة المحافظة على الثروة السمكية و مراعاة فترات الصيد و لعل في قصة بني إسرائيل العبر الجسام حيث أنهم غفلوا عن الالتزام بما أمرهم الله فاستحقوا الابتلاء و التضيق عليهم من الله عز و جل (وَأَسْأَلُهُمْ عَنِ الْقَرْيَةِ الَّتِي كَانَتْ حَاضِرَةَ الْبَحْرِ إِذْ يَعْدُونَ فِي السَّبْتِ إِذْ تَأْتِيهِمْ حِيتَانُهُمْ يَوْمَ سَبْتِهِمْ شُرْعًا وَيَوْمَ لَا يَسْبِتُونَ لَا تَأْتِيهِمْ كَذَلِكَ نَبِّئُهُمْ بِمَا كَانُوا يَفْسُقُونَ)، فلما وقعت منهم المعصية إذ احتالوا على أمر الله تعالى مسخهم قرده خاسئين (وَلَقَدْ عَلَّمْتُمُ الذِّينَ اعْتَدُوا مِنْكُمْ فِي السَّبْتِ فَقُلْنَا لَهُمْ كُونُوا قِرَدَةً خَاسِئِينَ، فَجَعَلْنَاهَا نَكَالًا لِّمَا بَيْنَ يَدَيْهَا وَمَا خَلْفَهَا وَمَوْعِظَةً لِّلْمُتَّقِينَ).

MAPPING OF NOISE BY USING GIS (GEOGRAPHIC INFORMATION SYSTEMS)

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Abstract

Road traffic is one of the biggest sources of environmental problems and one of the most widespread sources of noise.

Generally, the motorization rate of Traffic are increasing due to economic growth, which in turn tends to further generate rapid increase in traffic flow on the road network.

This paper shows how the GIS are used as tool decision making in analysis road vehicle noise and have proved to be effective in answering many queries of the environmental degradation. In addition to show the forecast of noise level which should lead to a propose solutions to reduce this negative effects and the degradation in environmental quality as well as to present the results of the analysis.

Keywords: *GIS, Spatial analysis, Road traffic, vehicle speed, noise levels forecast.*

ASSESSMENT OF MICROBIOLOGICAL WATER QUALITY AND ITS RELATION TO HUMAN HEALTH IN GAZA GOVERNORATE, GAZA STRIP

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Objective: To assess the contamination level of total and faecal coliforms in water wells and distribution networks, and their association with human health in Gaza Governorate, Gaza Strip.

Methods: Data were obtained from the Palestinian Ministry of Health on contamination of total and faecal coliforms in water wells and distribution networks, and on the incidence of water-related diseases in Gaza Governorate. An interview questionnaire was conducted with 150 residents of Gaza.

Results: The contamination level of total and faecal coliforms exceeded that of the World Health Organization limit for water wells and networks. However, the contamination percentages in networks were higher than that in wells. Giardiasis was strongly correlated with faecal coliform contamination in water networks ($r=0.7$) compared with diarrhoeal diseases and hepatitis A ($r=0.3$ and 0.1 , respectively). Diarrhoeal diseases were the highest self-reported diseases among interviewees in Gaza city. Such diseases were more prevalent among people using municipal water than people using desalinated water and water filtered at home for drinking ($OR=1.6$). Intermittent water supply and sewage flooding seemed to contribute largely to self-reported diseases. People in Gaza Strip have good knowledge on drinking water contamination, and this is reflected in good practice.

Conclusions: Water quality has deteriorated in Gaza Strip. This may contribute to the prevalence of water-related diseases. Self-reported diseases among interviewees in Gaza City were associated with source of drinking water, intermittent water supply, sewage flooding and age of water, and wastewater networks.

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جفاف البحر الميت وقناة البحرين (الأحمر - الميت)

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ملخص

إهتمت كثير من الدراسات بمشكلة جفاف البحر الميت وأثارها السلبية وانعكاساتها البيئية والاقتصادية والسياسية، ولكنها افتقرت في غالبيتها إلى الموضوعية والتوثيق الدقيق. جاء هذا البحث ليوقف على حقيقة المعلومات الواردة في الدراسات السابقة وأن يتناولها بالتمحيص والتدقيق. كما ناقش البحث مشكلة جفاف البحر الميت بأبعادها الطبيعية والسياسية، والوقوف على أثارها المباشرة وغير المباشرة التي تمثلت في طرح مشروع قناة البحرين "الأحمر - الميت" كحل للمشكلة. حيث بينت هذه الدراسة أخطار هذا المشروع وتداعياته السلبية على المصالح الفلسطينية والعربية وأعدت طرح المشروع القديم لقناة البحرين (المتوسط الميت) مع إجراء بعض التعديلات عليه ليخدم مصالح الأطراف الإقليمية جميعاً.

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ملخص

كثيراً ما اختلفت الآراء حول نشأة البحر الميت وأصل الأملاح فيه وعلاقته بقوم لوط، حتى جاء العلم الحديث ليضع حداً لجزء من هذا الاختلاف تمثل في تأكيده لحقيقة علمية مفادها أن البحر الميت تكون قبل 11 ألف سنة من الآن، ولينفي اعتقاد البعض بأنه تكون نتيجة العذاب الذي حل بقوم لوط، الذين كانوا يسكنون على ضفافه الجنوبية، وليبقى الجزء الآخر من الاختلاف قائماً حول طبيعة وشكل العذاب الذي حل بهم، حيث استند الكثير من المفسرين في تفسيرهم لهذا الحدث المرعب على المعجزات الخارقة التي لا يستطيع العقل البشري إدراكها. جاء هذا البحث ليناقد طبيعة العلاقة بين البحر الميت وقوم لوط بكل أبعادها، وليضع حداً للاختلاف القائم من خلال التوصل إلى إنجاز علمي جديد، أكد فيه أن ما حل بالقوم هو عبارة عن ظاهرة طبيعية يمكن أن يفهمها الإنسان ويدركها عقله، حيث استطاع أن يضع تصوراً واضحاً لصورة العذاب الذي حل بقوم لوط، مدعماً ما توصل إليه بالأدلة والبراهين العلمية والقرآنية.

**IMPACT OF PETROLIUM CONSUMPTION ON THE
ENVIRONMENTAL QUALITY IN GAZA STRIP PALESTINE
(CASE STUDY)**

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Abstract

Consumption of petroleum products in Palestine increased in the last years due to increment in transport vehicles, machines and warming in winter. These activities may result contamination of air water and soil. This presentation focuses in monitoring the air quality in Gaza and correlate it with health problems.

Air pollutants (NO_x, SO₂, suspended particulates, and lead content) were measured in Gaza. Results showed elevated levels of NO_x, SO₂, suspended particulate and lead in air samples collected from several locations in Gaza Strip. This was probably due to industrial or agricultural activities. Comparison with EPA standards showed violation of the maximum residue limit of NO_x and lead. The elevated levels of NO_x and SO₂ may have a negative effect in water quality due to possible formation of acidic solutions and consequently deteriorating the agricultural production and human health. The suspended particulates may catalyze atmospheric reaction and/or be active adsorbents to volatile compounds. Previous results (Safi 2004) showed elevated blood lead levels among children in Gaza, this is probably due to air and soil contamination by lead containing compounds. It is recommended to reduce the consumption of petroleum products and find alternatives such as air force electric generators, and or use environmentally friendly materials such as organo-clays to reduce contamination.

GROUNDWATER PROBLEMS RESULTING FROM HEAVY PUMPING IN NORTH GOVERNORATES OF GAZA STRIP (1999-2004)

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Abstract

The study aims to clarify the effect of heavy pumping by municipal wells on water level declination and groundwater salinization . Maps for chlorides as a representative for salinity, average water level maps and rate of abstraction maps have been drawn using hydrological year data for two stages (1999/2000) and (2003/2004) through the study period. It is found that in (1999/2000) about 64.5 % of the municipal production wells exceeded the recommended production rate (100 m³/hr) and reached to about 250 m³/hr R162L at west of Gaza. Most of the wells with high rate of production (> 200 m³/hr) were at the western part of Jabalia Town/Gaza City next to the plume of high salinity. This heavy pumping accelerated the formation of a big cone of depression with average water level more than (2 m) below MSL and so the hydraulic gradients have been significantly reversed (from the sea) around Jabalia town and Gaza City. The highest average value for chloride concentration reached 2014 mg/L and recorded at well E/64

In (2003/2004) the percentage of wells that exceeded the recommended production rate (100 m³/hr) decreased to 47%, while the number of abstraction wells and their duration of production has increased to cover the population demand. So, water level still declines rapidly and reached to more than 4m below MSL that has induced saline water from the sea or deep brines, to move into and contaminate the aquifer. The average chloride concentrations was above 3000 mg/L and reached 3346 mg/L at the western part of Jabalia Town far from the seashore by about 1.5 Km. At the western part of Gaza city (next to seashore) is more than 1000 mg/L and reached to 1459 mg/L far from the seashore by about 2 Km.

So, it can be conclude that this immensely important resource has been salinized rapidly in areas of heavy pumping. Consequently, a spatial and vertical re-distribution of the municipal wells and reduction the abstracted amount of water especially for the wells of high chloride concentration and those near to plumes of high chloride concentration is a must now for stopping this crisis.

EVALUATION OF GROUNDWATER POLLUTION IN NORTH GOVERNORATES OF GAZA STRIP (1994-2004)

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Abstract

This study aims to obtain a comprehensive picture about the spatial distribution of nitrates representing pollution in the aquifer through the study period (1994/2004) based on the hydrological year data. and to determine the main factors affecting groundwater pollution Maps for nitrate as a representative for pollution have been drawn. The level of nitrate contamination has been rising so rapidly where the percentage of polluted wells with nitrates exceeded the upper limit of 50 mg/l in 1994/1995, 1999/2000 and 2003/2004 were (72 %), (78.5%) and (85.5 %) respectively. This coincides with fluctuation in rainfall amount, which means that rainfall amount has played a role in increasing nitrate pollution.

It is also found that agriculture human activities and wastewater from urban areas are the two major factors responsible for nitrate pollution in the study area. In addition, the rainfall distribution, nature of the soil, lithological facies, and the topography of the study area have played important roles in accelerating in nitrate pollution in some areas than others. The depressed areas with higher rainfall, sandy soil, little clay in the unsaturated zone with the presence of pollution sources are higher in nitrate concentration. The high concentration of nitrate in the urban areas indicate that wastewater return flows through leakage from septic tanks and seepage from the unlined drains carrying municipal effluents probably play an important role in causing groundwater pollution in this area. Intensive use of nitrogen fertilizer and poorly managed irrigated systems may lead to nitrate leaching and pollution of groundwater.

USING TiO₂ WITH SUN LIGHT AND H₂O₂ TO ELIMINATE SOME ORGANIC POLLUTANTS

Monther salem, Samia Mokhtar and Khaled El-sousy.

Abstract

Many heterogeneous catalysts have special oxygen transfer properties which improve the utility of hydrogen peroxide. The most common of these is titanium dioxide (TiO₂). The oxidation power of this method depends mainly on the highly reactive hydroxyl radicals (OH*) generated. Today advanced oxidation method (AOM) which use hydrogen peroxide with TiO₂ under sun light is suggested to treat a variety of industrial wastes containing a range of toxic organic compounds (phenols, formaldehyde, complex wastes derived from dyestuffs, pesticides, wood preservatives, plastics additives, and rubber chemicals). The process (AOM) may be applied to wastewaters, sludge, or contaminated soils. In this project, for laboratory samples which contain a three substrates with various oxidation potential hard, moderate and easy pollutants. Kinetic study for the oxidation rates was been investigated, the influence of different parameters such as (ph, Temperature, amount of catalyst, concentration of H₂O₂), and determine the optimum conditions of the process. Spectrophotometer methods was been used for the kinetic study, Electron spin resonance was been used for free radicals rule investigation, derivatives of the oxidation through the course of the reaction can be identified by Gas chromatographic methods.

Keywords: A.O.M., H₂O₂ , TiO₂ , sun light, wastewater treatment, heterogeneous catalyst, organic pollutants.

**EVALUATION OF ECONOMICAL AND SOCIAL ASPECTS OF
MUNICIPAL SOLID WASTE MANAGEMENT IN RAFAH CITY -
PALESTINE**

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Abstract

Solid waste management is one of the important services which delivered by Rafah Municipality and consumed between 40-60% of the total municipal budget. Improving services and cost recovery considered as difficult tasks and a future challenge that face the Municipality. In general, the municipal financial system performance is weak and the only financial source for the solid waste collection service is the fees which collected from the residents.

The cooperation between municipality and the other stakeholders is in good situation but it's not enough and it needs more effort to keep this cooperation sustainable. Solid waste services of Rafah Municipality can significantly improved by developing new strategy taking in the considerations the financial and social aspects.

Key Words: Solid waste Management, Municipal Solid Waste, Rafah City.

**ASSESSMENT OF TECHNICAL AND ENVIRONMENTAL
PERFORMANCE OF MUNICIPAL SOLID WASTE MANAGEMENT
IN RAFAH CITY - PALESTINE**

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Ali Barhum

Abstract

THERE are many environmental problems connected with the current collection system specially the containers system in Rafah Municipality. No separation option is available for the hazardous waste from the municipal waste. Municipality collect about 88.5% of the total generated waste from the residential and commercial areas and about 4% of population is not covered by service. Limited recycling activities are running in low quality products. Environmental health awareness unit activities running on irregular base and depend on donors.

The work analyze different stages of Solid Waste Management system in the City for the purpose of developing more efficient and effective one, which will be reflect positively on environment, health, economy and service level of the community. Consequently, the study will contribute in providing based scientific data to decrease the risks and hazards of the current system.

Key Words: Rafah City, Gaza Environment, Municipal Solid Waste Management

دراسة حول البيئة وعلاقتها بازدياد الأمراض السرطانية

إعداد / ربا الحسني

رئيس قسم البيئة - دائرة شئون الصحة والبيئة / محافظة غزة

ملخص الدراسة

إن المشاكل البيئية في قطاع غزة ضخمة والوضع الشاذ الذي تعيش فيه أدى إلى تدهور واضح وخطير في البيئة الطبيعية والبيئة الإنسانية، كما أحدث التضخم السكاني أوضاعاً معيشية صعبة مما أثر بطريقة مباشرة أو غير مباشرة على جودة الصحة و تعرض حياة الإنسان للخطر . فنحن في هذا الوقت أحوج ما نكون فيه إلي إثراء معارفنا بمعلومات حديثة ومتعمقة حول الأمراض السرطانية، فالتلوث البيئي إلى جانب المتغيرات في السلوكيات الحياتية كالتدخين والتغذية السلبية وعدم ممارسة الرياضة، وغيرها من السلوكيات الحياتية التي أصبحت تتطلب المزيد من التقصي والدراسة للتأكد من ارتباطها المباشر وغير المباشر بأنماط حدوث الأمراض السرطانية، حيث تشير إحصائيات منظمة الصحة العالمية إلى انه يتم تشخيص نحو 10 ملايين حالة سنويا على مستوى العالم منها 40% تنتهي بالوفاة وان العوامل البيئية تأتي في مقدمة مسببات السرطان وتؤدي إلى ما يقرب من 90% منها إلى السرطان بينما بقية الإصابات وراثية. ولطالما دارت في ذهني مثلما دارت في ذهن الكثيرين أسئلة عديدة خاصة بالسرطان كيف تتكون هذه الأورام؟ ولماذا تتكون؟ وكيف تنتشر بهذه السرعة العجيبة دون أن يدري بها الإنسان إلا في المراحل المتأخرة من المرض ، حيث يكون العلاج آنذاك مجرد تحصيل حاصل لا طائل منه ولا فائدة

جاء هذا البحث ليساعد على توصيل المعلومة المبسطة لتتقيد أفراد المجتمع بهذا المرض و التأكيد على أهمية المبادرة إلي عمل الفحوصات الوقائية و الاستكشافية عند الإحساس بأي اختلال غير طبيعي للحالة الصحية للشخص.

وهذا البحث العلمي المهم بما يتضمنه من مواضيع متشعبة نتناول مشكلة البيئة وعلاقتها بازدياد الأمراض السرطانية بأبعادها المختلفة، ومناقشة الأوراق العلمية التي سأقدمها سنتضع الاتجاهات الحديثة في التعامل مع هذه المشكلة، كما سينعكس إيجابا على التوصيات التي ستصدر عن هذا البحث لتكون أكثر ملاءمة في مراجعة وتقييم وتطوير الإستراتيجية المستقبلية المناسبة في هذا المجال المهم.

لقد اعتمدت الدراسة على المنهج الوصفي التحليلي للمرض كما اعتمدت على المدخل الكمي في تحليل انتشار المرض حيث تم تصميم استمارة استبيان لتوضيح آفاق المرض وانتشاره وتم تعبئتها من قبل 35 مريض من مرضى السرطان المراجعين في قسم الأورام بإشراف د. زياد الخزندار أخصائي أورام بمستشفى الشفاء - غزة .

وكانت نتائج الاستبيان كالتالي :

يتم استقبال من 4-5 حالات مرضية في كل يوم أي مايقارب 60 حالة مرضية يتم علاجها شهرياً أي بمعدل 700 حالة سرطانية في العام .

إن نسبة الإصابة في الإناث تكون أعلى من الإصابة في الذكور .

إن أغلبية الأشخاص المصابون بمرض سرطان الرئة هم من الأشخاص المدخنين والمصابات بسرطان الثدي هم من يقطنون مع أناس مدخنين .

الفئة العمرية الأكثر إصابة هم مافوق سن الخمسين .

إن نسبة سرطان الثدي هو الأكثر شيوعاً في القطاع وبعدها يأتي سرطان القولون والمثانة ومن ثم اللوكيميا والبروستاتا والمبايض والغدد الليمفاوية .

إن معظم الإصابات كانت من سكان جنوب غزة وشرق غزة ومن ثم الشمال وبعدها مخيم الشاطئ ثم الغرب .

إن جميع المرضى يخضعون لعلاج كيميائي وأغلبيتهم يخضعون للعلاج الإشعاعي وكذلك الهرموني .

بسبب سوء الوضع الاقتصادي في القطاع يضطرون للاعتماد في غذائهم على اللحوم المجمدة والمعلبات خاصة أن معظم هذه المواد تبقى على المعايير والحدود فترات من الزمن تحت أشعة الشمس وتتعرض لعوامل تغير من مكوناتها .

إن غالبية الأشخاص يعيشون في بيوت من الأسبست ولفترات زمنية طويلة .

نقص في التوعية والإرشاد وعدم وجود الرعاية وعدم وجود مراكز للكشف المبكر عن السرطان كان له السبب الأساسي في تقشي المرض ووصوله لحالات متأخرة من العلاج .

إن العامل الوراثي يشكل سبب رئيسي في الإصابة بالمرض خاصة مرض سرطان الثدي .

إن الفئة الوظيفية التي كانت أكثر إصابة هم من يعمل بمصانع الخياطة والورش والدهان والبناء أخرى حيث نجد في معظم المجتمعات الراقية تكون نسبة المرض أعلى من المجتمعات الفقيرة بوجه عام ، ولكن هناك بعض الأنواع من السرطان تكون نسبتها عالية في بعض المجتمعات

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الفقيرة والبدائية مقارنة بالمجتمعات المتقدمة ومن هنا يتضح أنه الصعوبة بمكان رسم خطوط متوازنة بين المجتمعات المختلفة لتوزيع مرض السرطان. وموقع المرض بين الأمراض الأخرى يعتبر في المرتبة الرابع من بين الأمراض في فلسطين حيث يأتي بعد أمراض القلب والجهاز التنفسي والأعصاب.

وبناءً على هذه النتائج تم الخروج بمجموعة من التوصيات الهامة بهدف نشر التوعية والتنقيف الصحي والبيئي وتشجيع المواطنين على المشاركة الفعالة في حماية البيئة ووقاية أنفسهم .

ENVIRONMENTAL AWARENESS AMONG SCHOOL-AGE CHILDREN IN GAZA - PALESTINE

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دائرة شؤون الصحة والبيئة - محافظة غزة

Abstract

Nurturing and science education play a significant role in developing a positive attitude toward the environment. Several researchers have shown that there is an important link between environmental science education and environmental awareness and attitude. According to this importance, the Ministry of Education and Higher education conducted the first Palestinian Environment and Health curriculum for males only in the high basic school in Gaza Strip and West Bank since the educational year 2001/2002.

The purpose of this study is to determine the level of environmental awareness and attitude among students of class 9 in the governmental high basic school in Gaza city, and their relationships with gender, residential area and grade of students' scores achievement at school. Also, to investigate the relation between environmental awareness and attitude. The researcher constructed a questionnaire composed of two sections, the first section was to measure students' environmental awareness by applying multiple choice questions test, and the second section was a tool to measure the attitudes of students' toward their environment.

The study was applied in eight governmental high basic schools selected in a stratified random way from four areas of Gaza city according to Gaza municipality distribution, with four male schools and four female schools. The questionnaire was completed by 400 students of class 9 in the governmental high basic school children in Gaza city for the educational year 2005 – 2006 with equal numbers of male and female students in the study sample. The findings of this study may be useful in accentuate the importance of improving our students' environmental awareness and attitude to insure protecting our Palestinian environment from further deterioration.

إدارة المخلفات الطبية الخطرة بين الواقعية والمثالية والإمكانات المتاحة

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مستخلص

إن الهدف من إقامة أي مركز صحي بغض النظر عن حجمه هو أن يكون مكاناً للشفاء والمعالجة إلا أن قدرة المؤسسة الصحية على تقديم مستوى جيد من الرعاية الصحية قد تتأثر إذا كان مستوى الأمان الصحي فيها ضعيفاً وخطر إنتقال العدوى إلى المرضى و الموظفين عالياً. لذا فإن تحقيق مستوى جيد من الأمان الصحي يعتبر أمراً مهماً لمكافحة العدوى. وتعتبر المخلفات الطبية أحد مصادر وأسباب انتشار العدوى إذا لم يتم إزالتها بانتظام والتعامل معها بالاسلوب والنهج الصحيح، وهي ليست المصدر الوحيد لكنها واحدة من الأسباب التي يمكن تجنبها والسيطرة عليها، ويمكن تحقيق ذلك بقليل من الجهد والاستعداد وفق تخطيط وإدارة سليمة، لذا فإن الإدارة الجيدة للمخلفات الطبية في المؤسسات الصحية تتم بالفرز الفعال للمخلفات والتعامل معها حسب صنفها من حيث المناولة والتخلص ليُعامل كل صنف منها بشكل منفصل. ولا يتحقق ذلك إلا بعمل برنامج لإدارة هذه المخلفات الطبية وإلزام الطاقم الإداري به ودعمه وتشجيعه وتعاون باقي العاملين على اختلاف مراكزهم.

لقد تم تقييم وتقدير الوضع الحالي للمخلفات الطبية واسلوب تداولها في العيادات التي تم اختيارها كحالة دراسية (8عيادات تابعة للرعاية الأولية في محافظة غزة)والذي شكل القاعدة الأساسية لعمل برنامج لإدارة هذه المخلفات الطبية عموماً والخطرة منها خصوصاً بحيث تأخذ بعين الاعتبار التوصيات العالمية ضمن حدود الإمكانيات المتاحة للمؤسسة الصحية ليتم إخراج برنامج عمل متكامل يتم من خلاله التنسيق لجميع الأنشطة والعناصر التي يشملها هذ البرنامج وتوزيع واضح للمهام المتعلقة بعناصره على اختلاف مراحل تداول هذه المخلفات.

اعتمد هذا البرنامج على الزيارات الميدانية للعيادات التي اختيرت كحالة دراسية (case study) والتي تم مراعاة أن تمثل هذه العيادات المستويات المختلفة لتصنيفها بناءً على الخدمة الطبية المقدمة... لذا فإن جميع النتائج الخاصة بهذا البرنامج قد رصدت ميدانياً بالمعاينة على أرض الواقع.

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استمر العمل بالبرنامج في العيادات التي تم اختيارها لمدة سنة، لذا فإنه يمكن اعتماد نتائج هذا البرنامج كعينة ممثلة يمكن تحليلها والخروج بتوصيات بناءً على هذه النتائج كونها ذات مصداقية عالية لاعتمادها على العمل الميداني.

ولعل من أهم التوصيات التي خرجت بها هذه الدراسة هي :

1. تعيين جهة مركزية متخصصة تكون مسؤولة عن إدارة المخلفات الطبية وما يترتب عليه من عمل التنسيق والترتيبات اللازمة لتداولها في جميع المراحل ابتداءً من إنتاجها وحتى التخلص النهائي منها.
2. سن التشريعات والقوانين واللوائح التي تنظم وتضبط عملية التداول للمخلفات الطبية مؤطراً ذلك بتوصيات منظمة الصحة العالمية وضمن الحدود والإمكانيات المحلية المتاحة.

كفاءة معالجة مياه الصرف الصحي في محافظة غزة وإمكانات إعادة الاستخدام

فايق إبراهيم المدهون (2007). مدير دائرة شؤون الصحة والبيئة، محافظة غزة - فلسطين

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الملخص

أنشئت محطة المعالجة سنة 1977 على بعد 2 كم شرقي شاطئ البحر في منطقة الشيخ عجلين وعلى مساحة تقدر بـ 130 دونم، تقع أحواض ترشيح المياه المعالجة في منطقة من الكثبان الرملية على بعد حوالي 1000م شرقي محطة معالجة الصرف الصحي بالشيخ عجلين. تبلغ مساحة الحوض الشمالي حوالي 18 دونم، أما الحوضين الجنوبيين فتبلغ مساحة كل منهما حوالي 11 دونم. تهدف هذه الدراسة بشكل أساسي إلى تقييم كفاءة معالجة مياه الصرف الصحي في محطة المعالجة ومناظرة النتائج بالمعايير الفلسطينية لإعادة استخدام المياه المعالجة في تغذية الخزان الجوفي بالترشيح، الرى أو التخلص منها في البحر بغية العمل على ضمان الاستفادة القصوى من تلك المياه باعتبارها من أهم المصادر غير التقليدية التي تستوجب عدم التفريط بها. بلغ معدل المياه العادمة التي تصل إلى محطة المعالجة في الفترة ما بين عامي 2004-2005 بـ 48330.4

م³ يومياً. أظهرت محطة المعالجة قدرة جيدة على إزالة محتوى مياه الصرف الصحي من الـ BOD5 ، COD و TSS حيث بلغت نسبة الإزالة 90.0% ، 84.5% ، 85.5% للمؤشرات تتابعا. هناك زيادة في محتوى المياه بعد المعالجة من المواد الكلية الصلبة الذائبة TDS. لازالت هناك مشكلة في التخلص من محتوى مياه الصرف من الأمونيا-نيتروجين NH3-N حيث أن خطوات المعالجة مازالت غير كافية لتخفيض هذا المحتوى.

إن مياه الصرف بعد المعالجة كانت مطابقة للمعايير الفلسطينية لإعادة الاستخدام من حيث محتواها من المعادن الثقيلة سواء للترشيح، الزراعة أو التخلص منها في عرض البحر على بعد 500 متر. هناك زيادة طفيفة في محتوى النيتريت والامونيا في مياه بعض الآبار المحيطة. بشكل عام هناك ارتفاع تدريجي في تركيز المنظفات عبر السنوات في معظم مياه الآبار مما يرجح تأثرها بمياه الترشيح في الأحواض المجاورة لها. رغم كفاءة المحطة في إزالة 98% من بكتيريا

الكوليفورم الغائطية *Fecal coliform* مازال محتوى المياه من تلك البكتيريا يحد من استخدامها وفق المعايير الفلسطينية. خلصت الدراسة إلى اعتبار هذه المياه مصدراً هاماً لا يستهان به في ضوء شحة وندرة مياه الشرب في محافظة غزة. أوصت الدراسة بالمراجعة الدقيقة لخطوات معالجة مياه الصرف الصحي في محطة الشيخ عجلين لضمان الوصول إلى مياه معالجة وفق المعايير الفلسطينية لتغذية الخزان الجوفي بالترشيح أو لاستخدامات الري، هناك ضرورة لاستمرار المراقبة لبعض المؤشرات كالمنظفات والمعادن الثقيلة. ضرورة توفير مصدر شرب بديل عن مياه بئر المسلخ ووضع القيود على استخدام ذلك البئر لأغراض الشرب. السعي الحثيث لتوفير التمويل اللازم للمشروع في تنفيذ محطة المعالجة المركزية مع الأخذ بالحسبان ضرورة إعادة استخدام المياه المعالجة في شتى أغراض التنمية.

STORMWATER IS A FATAL ISSUE TO RECHARGE THE GROUNDWATER AQUIFER IN THE GAZA STRIP

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Abstract

Water is the vital resource to support all forms of developments. Water scarcity is a characteristic of Gaza Strip, due to overexploitation of groundwater, while the recharge component such as storm water is reduced. The amount of rainwater accounts for 125 in case Gaza Strip considering the average rainfall 300 mm/yr, more than 40% of this amount discharge to the sea either by natural flow or pumped to protect the residential areas from flooding. The urbanized area represent around 16% in the year 1998; and 20% in the year 2004, and expected to increase in the next years due to the rapidly increasing in population growth to represent 33%, and 44.5% for the years 2015, 2025 respectively. The total amount of rainwater losses due to urbanization as surface run-off estimated to be 14.5 Mm³ in the year 1998 and expected to increase to be about 20Mm³, 35Mm³, and 52 Mm³ for the years 2005, 2015, and 2025 respectively. From this overall situation arises the question of the use of complementary an urgent mitigation measures likes and not restricted to rainwater harvesting that's must be considered in city planning. If storm water were used to recharge groundwater in the Gaza Strip, it would ideally solve the problem of continuous depleted of groundwater aquifer.

Key words: Storm water, Groundwater Recharge, Urbanization, Rainfall, Surface Run-off, Mitigation Measures .

GROUNDWATER AQUIFER CHARACTERISTICS OF GAZA STRIP

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Abstract

Gaza Strip like some other parts of the Middle East countries has a distinct and serious deficit in water. Currently, there is a water shortage problem for most of the Gaza Strip's residents. The quality of consumed water has very grave problems, as some bacteriological contamination, as well as increase in nitrates and chlorides to levels which already have been above the safety limit. Further more it is forecasted that the quantity of available water, which is already scarce, may drop to incompatible levels with an acceptable standard of living, public health, social and economic development in the region.

To solve the quantity shortage problem in Gaza Strip, correct data about the physical aquifer parameters should be available. Since, hydrogeological studies about Gaza Strip aquifer are not available; an accurate scientific research will present the basis of figuring the aquifer parameters, which may help in calculation the amount of stored water in the aquifer and can be performed in the field by either direct method, or by indirect method.

Every aquifer has its own physical parameters (Characteristics), as Porosity (E), Transmissivity (T), and Storage Coefficient (S), these physical parameters control the fluids passage through the aquifer. To study any aquifer, we must calculate the aquifer physical parameters by executing some tests and analyze their results, from these tests the pumping test can be used.

The aim of this research is to find some physical characteristics for the Coastal Plain Aquifer in Gaza Strip, as values for Transmissivity (T) and Storage Coefficient (S).

This study showed that, the water quantity is decreasing year after year, and the quality of water is in continuous deteriorating. There are some suggestions to increase the water quantity in the reservoir, and it is recommended to decrease the usage of water and use the water wisely.

**REVERSE INVESTIGATIONS AS AN ALTERNATIVE METHOD
FOR NON-CONDUCTING GEOTECHNICAL INVESTIGATION IN
LANDFILLS**

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Abstract

Geotechnical investigation can be used to obtain data to study the different soil strata, which are present at the landfill site, and to prepare groundwater maps for the site. Stability of the site and attenuation of leachate are the main purposes for geotechnical tests. This paper discusses the importance of geotechnical investigations for construction landfill site. A case study of Gaza is presented where geotechnical aspects were not investigated properly either in the laboratory or the field. Solid waste is dumped without separation or recycling. In Gaza, the site consists of loess soil with sub-surface sand with clay lenses. These lenses are of low permeability and at a considerable depth, which allow the leachate to be attenuated. It has been found that daily compaction and covering of the waste helps in increasing the site stability. Where natural attenuation processes are evident from groundwater and leachate analysis. It is recommended that geotechnical investigations should be considered as an integral part of planning and designing a new landfill site.

Key Words: Solid waste, landfill, geotechnical, site investigation, site stability, natural attenuation, leachate, waste disposal, Gaza.

SUSTAINABILITY AND INSTITUTIONAL WATER RESOURCES REGIME IN THE GAZA STRIP (CASE STUDY)

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Abstract

The Gaza Strip is located in the southern part of Palestine and has approximately an area of 365 km² (Figure 1). The Gaza Strip population is about 1.25 million. Average rainfall, which is the main aquifer recharge source, is 415 mm/year. The main source of water in the Gaza Strip is the shallow aquifer, which is part of the coastal aquifer. The quality of the groundwater is extremely deteriorated in terms of salinity and nitrates. It is concluded from the available data that only 10 percent of the Gaza's aquifer resources meets the WHO water standard for Chloride concentration (250 mg/l). In addition although the safe yield of the Gaza's aquifer is only 55×10^6 m³/y, the Palestinian consumption from the groundwater resources in the Gaza Strip is about 131×10^6 m³/y. This implies that there is over-pumping of more than twice of the safe yield, and consequently leads to the deterioration of the groundwater quality.

Sustainable use of water resource as a natural resource requires an optimum distribution of the use options among present and future users and use functions. The presence of rivalries between users and use functions can be considered as an indicator of insufficiently sustainable use of water resources. However, rivalries in the Gaza Strip may exist between heterogeneous use types (e.g. agriculture, industry, domestic, etc.) or homogeneous uses (e.g. rivalries between farmers in crop type). The type of water resource management regime had a vital role in achieving the sustainable use of the water resource by diminishing or preventing rivalries between users and use functions.

The aim of this work is to evaluate the institutional regime of water resources in the Gaza Strip as well as the relation between the ecological sustainability and the institutional regime.

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