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AGRICULTURAL SCIENCES

***Fusarium species* associated with mango malformation
(*Mangifera indica L*) in Malaysia**

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Abstract

Mango malformation is caused by highly variable *Fusarium spp*, in most of the production areas in the world. Diseased mango inflorescences showing some degrees of malformation in two mango growing areas in Malaysia. Three species of *Fusarium* were isolated and identified as *F. proliferatum* comprising 48% and *F. subglutinans* 28% of the 42 isolates, and the remaining 24% isolates comprising *F. oxysporum*. *F. proliferatum* and *F. subglutinans* were found from all sampling sites in Penang and Johor in Malaysia, while *F. oxysporum* was recovered from sampling sites in Kampong Gambut and Johor, except the isolates Fs77P from Relau, Penang. The objective of this study is to characterize *Fusarium* species associated with mango malformation, based on morphological characteristics. For this purpose, we examined *Fusarium* strains, isolated from diseased mango inflorescences, from Penang and Johor mango growing areas in Malaysia.. The morphological characters considered were the shape of the conidia, presence of mono- and/or polyphialides, origin of the conidiophores from the substrate, and the presence of chlamydospores. The species composition found in Malaysia was similar to that observed on mango in other countries where the disease caused by *F. proliferatum* and *F. subglutinans* is severe.

Key words: Mango, *Fusarium species*, malformation, taxonomy .

ENGINEERING

Simulation of industrial network for harmonic estimation and filters design

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Abstract

The Alternative Transient Program (ATP) is used to simulate power quality problems occurring in most of industrial networks because of non-linear loads. In this paper some of industrial loads connected through a converter, which is a harmonic source in the power systems, are modelled. The ATP is an effective and easy method to investigate the harmonic content produced by the converter. The results obtained showed that the current contains, in addition to the fundamental harmonic 50 Hz, also the 5th, 7th, 11th and 13th harmonics with major amplitudes and some other orders with minor amplitudes. Therefore suitable (multiple parallel single-tuned, passive) filters are designed to be used to eliminate each of these harmonics.

Key words: ATP-Draw, converter, harmonics, harmonic current, filter.

Automotive propeller shafts: Design and optimization

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Abstract

In this paper, six automotive propeller shafts, made of different materials, are designed. Finite element modeling based on shell element is used in the eigenvalue analysis. Shaft weights, buckling torque and dynamic performance for different design alternatives have been studied.

Optimization using Simulated Annealing (SA) Algorithm is used to optimizing composite shafts. Results obtained clearly show the possibility of designing a single-piece propeller hybrid shaft made of fibre-reinforced composite and aluminum tube, having less weight compared to that of steel shaft, and having its fundamental natural frequency above the shaft operating speed.

Key words: Propeller shaft, composite shaft, hybrid shaft, natural frequency, optimization, simulated annealing.

Evaluation of improved E-learning wireless network performance on IEEE 802.11b LAN

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Abstract

In this paper, we have presented an improved E-learning wireless network using IEEE 802.11b LAN for a classroom. This proposed E-learning wireless network uses web browsing, database, email, and ftp servers. Also, we consider the maximum number of wireless clients equal to 100 to be used in this E-learning classroom wireless network. We have evaluated the performance of the proposed E-learning wireless network using OPNET IT GURU simulator.

The experimental results show that the proposed E-learning wireless network performs better than the web browsing based E-learning network in terms of high throughput and small delay.

Key words: E-Learning, wireless network, OPNET, IEEE 802.11b standard.

GEOLOGY

Geochemical processes controlling the elevated fluoride concentrations in groundwater of Al-Azareq Basin, Al-Dhala, Yemen

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Abstract

Groundwater samples were collected from various locations of Al-Azareq Basin, in the southern part of Al-Dhala Governorate. Groundwater samples were collected from 16 selected points and analysed for fluoride ion along with other chemical parameters. Results showed that collected water samples were severely contaminated by the presence of fluoride ion, and most of the samples have higher concentration than the prescribed WHO standards (1.5 mg/l) for drinking water. Fluoride ion concentrations ranged between 1.11 and 6.95 mg/l with an average of 4.02 mg/l. Regional hydrogeochemical investigation indicates that water-rock interaction is probably the main reason for the high concentration of fluoride ions in groundwater. The geochemical modeling indicates that calcite and fluorite are the main minerals controlling the aqueous geochemistry of elevated fluoride ion contamination occurring in the groundwater of the study area. The concentration of F⁻ in groundwater is positively correlated with that of HCO₃⁻ and Na⁺, indicating that groundwater with high HCO₃⁻ and Na⁺ concentrations help to dissolve some fluoride-rich minerals. The population of the study area is at a high risk due to excessive fluoride intake, especially when they are unaware of the amount of fluoride being ingested due to lack of awareness.

Key words: Hydrogeochemistry, Fluoride, Groundwater, Fluorosis, Al-Azareq Basin

MATHEMATICS

On the application of new convergence criteria for Kantorovich method to nonlinear singular integral equation with a shift

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Abstract

The paper is concerned with the applicability of some new conditions for the convergence of Newton–kantorovich approximations to solution of nonlinear singular integral equation with shift of Uryson type. The results are illustrated in generalized Holder space.

Key words: Newton–Kantorovich approximations, Nonlinear singular integral equations of Uryson type, Noether operator, Carleman shift, generalized Holder space.

MEDICINE

The most common types of benign cutaneous hemangioma in Aden

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Abstract

This study has been conducted to determine the most common types of benign haemangioma in relation to sex, age groups and anatomic location.

We reviewed retrospectively 62 biopsies of patients with hemangioma seen during the year 2006 to 2009 in Algamhuria Teaching Hospital.

Patients were divided in two age groups: one constitutes those under 20 years, and the other constitutes those over 20 years.

42 (67.7%) were females and the remaining 20 (32.3 %) were males and the approximate ratio of females to males was 2:1. Nine (14.5%) males out of the total 20 males were found in the age group < 20 years and thirty (48.4%) of the total 42 females were found in the age group \geq 20 years, while males were 11(17.7%) in this age group.

Capillary haemangioma was the most common type (69.4%) than cavernous haemangioma (30.6%). The head and neck were the most anatomical occurrence (58.1%). We concluded that capillary hemangioma was the most frequent type of hemangioma that affects females more than males.

Key words: hemangioma, sex, age groups, Aden.

**Epidemiology of pulmonary tuberculosis in Al-Mansoura district,
Aden: 2007-2008**

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Abstract

This retrospective study aims to evaluate the incidence, gender differences and socio-economic status of patients suffering from pulmonary tuberculosis in, Al-Mansoura District, Aden, during 2007-2008. There were 137 new patients with pulmonary tuberculosis (59.9% males and 40.1% females), with male/female ratio 1.5:1. The incidence in 2007 was 74 per 100,000, and decreased to 34 per 100,000 in 2008. The higher number of patients affected were those whose age is between 16 to 35 years. and who are living in the two poor areas, old Mansurah and Hashed area. It can be concluded that the incidence rate decreased in 2008. Males were more affected and the socio-economic factors play a role in the rates of infection.

Key words: Epidemiology, pulmonary tuberculosis, Al-Mansoura, Aden.

**Epidemiological retrospective study of superficial cutaneous fungal
infections in Aden**

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Abstract

Superficial skin fungal infections are the most common dermatologic complaints encountered in ambulatory practice, affecting millions of people worldwide. The study aimed to describe the frequency of superficial skin fungal infections and to determine the frequency of the different types of the infections. It is a descriptive and retrospective study based on records of patients attending the Dermatology Unit in Al-Gamhoria Teaching hospital during the year 2008. The results revealed that the total cases of superficial fungal infections were 521 ; males were 54.1% with a male/female ratio of 1.2:1. They were 35.3% of the age \leq 15 years ($p > 0.05$). Dermatophyte infections were 53% and cases of yeast

infections were 47%. The frequency of tinea cruris represented the higher rate (28.3%), followed by tinea pedis (24.3%) and tinea corporis (22%). In yeast infections, Pityriasis versicolor was predominant representing 80.8% ($p < 0.05$). Fifty six percent of the patients were seen during the months of April to September. We concluded that superficial skin fungal infections are diseases of considerable importance in Aden, and dermatophytosis and yeast infections are respectively the main superficial fungal infections.

Key words: frequency, superficial fungal infections, Aden .

Macroscopic measurements of placenta: A comparison between alive newborn and fetal deaths

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Abstract

The aim of this study is to compare the macroscopic finding between placenta in singleton alive newborn and placenta in fetal death in al-Wahda Teaching Hospital, from December 2004 to May 2005. The study is a prospective and analytic case control study into which the total number 102 placentas were studied: fifty two were collected from women with ≥ 28 weeks of gestational age resulting in delivery of dead baby and 50 placentas from mothers with alive newborns as control, from the hospitals (Alwahda and Aden Teaching Hospitals). The placentas were fixed immediately in 10% formalin. In gross preparation. The weight of the placenta was carried out by a balance and the measurement of the diameter and thickness was taken by a roller. Macroscopic evaluation included the measurement of the weight diameter and thickness for both groups. The results were statistically significant in relation to the weight and diameter that were reduced in the placentas of fetal deaths. Also other clinical findings were correlated with fetal death as mean gestational age is 34.8 weeks, and mean fetal body weight is 2055.8 g .

Key words: Newborn , fetal death, placenta and gestational age .

A glance of cholera outbreak in Aden, 1993.

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Abstract

The aim of this study is to highlight the epidemiological profile of cholera outbreak which happened in Aden Governorate 1993. The review comprised 49 laboratory confirmed cholera cases representing 37% of the total cases (133) who suffered acute watery diarrheal disease and were admitted in Rehydration Health Center during the period from August - September 1993.

The study found that the mean age of patients was 16 years, female to male ratio was 1 / 0.9, children less than 15 years represented 66.7% of cholera cases, and the mean length of stay in the center was 1.7 days, with case fatality rate of 2%.

The study has recommended the establishment of an emergency rehydration units in each district, and to strengthen health education at the community level, especially among parents and families, about the importance of seeking medical care, when children are suffering from dehydration symptoms of acute watery diarrheal disease in any cholera outbreaks in the future.

Key words: Cholera, outbreak, and Aden.

Laboratory technician satisfaction with hospital clinical laboratory services in Aden Governorate, Yemen, 2009

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Abstract

Satisfaction is an important factor of the quality of health services. Technicians are one of the primary internal customers of laboratory services, where quality is highly dependent on their performance.

The aim of this study is to evaluate the level of laboratory technician satisfaction with hospital clinical laboratory services and related factors in Aden Governorate.

This is an observational cross-sectional study, carried out from September 2008 to September 2009. Three public and three private hospitals in Aden Governorate were included. Out of the 73 participants, 47.9% were males, and 52.1% were females.

The overall lab technician satisfaction was in the average 3.60. Females showed higher level of satisfaction than males in most of the services and lower satisfaction level with salary, access to external, internal and national laboratory training and seminars, although the results were not statistically significant ($p > 0.05$). Public institutions got higher level of satisfaction than private with

salary, and overall satisfaction with lab services; while private institutions got higher level of satisfaction with equipment provision of the laboratory ($p < 0.05$). Technicians of ≥ 10 years in the lab field showed higher dissatisfaction with

opportunity to use new technology, compared with less experienced technicians. No association was observed for technician satisfaction in regard to educational level, whereas more educated technicians (BSc/MSc) showed less satisfaction.

The overall lab technician satisfaction with hospital clinical laboratories is average in Aden. Technician satisfaction with some of the laboratory services is related to experience in the lab field and institution type.

Key words: Technicians, Satisfaction, customers, Health services, Clinical laboratory .

PHARMACY

Epidemiological study of childhood diarrhea in Aden city

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Abstract

Epidemiological information of physician, laboratory examination, and questionnaire, on cause-specific morbidity and mortality of acute diarrheal in children, is necessary to devise an appropriate intervention strategies. This is an outpatient-based case-control study conducted on random population of a total of 1167 children, who are under 10 years of age, living in Aden . SPSS was used to analyze univariate association between the variables and diarrhea, calculating the odd ratio of Confidence Intervals - 95% at $P < 0.05$. The incidence rate of chronic diarrhea was 53.23%, versus 46.77% acute. Bacteria is the main cause both in acute and in chronic diarrhea, whereas the frequency of the parasitic infection was less, but far more than the frequency of the cases by viruses. The prevalence of acute diarrhea was the lowest among children aging < 6 months, but the highest in children aging 6-11 months old in both sex. A gradual lower in the incidence rate, then becomes significant in males over 3 years, and in the females over 4 years-old. Sex of patients was not significantly associated with diarrhea. There were no noticed differences in the distribution of many personal data of the diarrheal children or their parents, except of the diarrheal children of Somali race (8.5%), and illiterate mothers (95.4%), children living in a shacks (16.58%), and cases of 6-23 months old not on breastfed (37.3%). In conclusion, the study provides a furnish base necessary for subsequent analysis on the complex multifactorial process of diarrhea incidence.

Key words: Acute diarrhea, epidemiology, children, Aden city.

**High performance liquid chromatography(HPLC) method for the
evaluation of co-trimoxazole tablets (trimethoprim/
sulphamethoxazole) of different commercial brands in Yemen**

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Abstract

The aim of this study is to assess the quality and quantity of the six commercial brands of co-trimoxazole tablets (trimethoprim 80 mg, sulphamethoxazole 400 mg tablets) marketed in Yemen. We have selected this drug because the combination of trimethoprim and sulfamethoxazole (Co-trimoxazole) has occupied a central role in the treatment of various commonly encountered infections and has also been particularly useful for several specific clinical conditions.

Individually, both sulphamethoxazole (SMZ) and trimethoprim (TMP) are bacteriostatic, but the combinations become cidal against many microorganism.

We have applied RP-HPLC method for determining the six commercial brands of co-trimoxazole tablets, which marketed in Yemen.

The limit of content of co-trimoxazole tablet is 93 - 107% according to USP. The Identification and assay results of these six commercial brands of co-trimoxazole were compared and they showed that the identifications were complied with USP requirements. The assay analysis of five commercial brands of co-trimoxazole (Cotrimol® , Ipeca Laboratories Ltd.), (trimethoprim 106.5%: sulphamethoxazole 100.09), (Lagatrim®, Lagap company), (trimethoprim 100.89%:sulphamethoxazole 101.80), (Septrin®, Glaxowellcome), (trimethoprim 96.70%:sulphamethoxazole 93.00%), (Sinotrim®, Ildong pharm.co.Ltd), (trimethoprim 101.00%: sulphamethoxazole 95.00%), (Alphatrim®,Alpha-Aleppo Pharmaceutical Industries), (trimethoprim 106.70% sulphamethoxazole 99.60%), were complied with USP requirements, whereas the component trimethoprim (109.00%) of Balkatrin®, Arab Pharm. Manuf. Co. Ltd.), did not comply, but the component sulphamethoxazole 103.00%) did.

Key words: Different brands of co-trimoxazole (trimethoprim, sulphamethoxazole) tablets, RP-HPLC.

PHYSICS

**Study of photodegradation mechanisms of Poly-ethylene-
terephthalate used in food and water packaging**

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Abstract

samples are very susceptible to photodegradation, causing an impressive change in color and optical density. The samples which are exposed to UV radiation at 400nm showed that the optical density of (PET) samples increases progressively with the exposure time for all types of the samples. We found that the spectra of all exposed and unexposed samples are almost similar. This means that the photodegradation mechanisms of (PET) in natural weathering is of chain scission reaction because it does not lead to the formation of new bands or new monomers, even for a long exposure time.

Key words: Photodegradation, (PET), Packaging, UV light, Absorption.

**Measurements of radioactivity in some samples of marble used in
Yemeni buildings**

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Abstract

Seven samples of marble from local locations were collected from different factories in Yemen. Gamma ray spectroscopy is used to analyze the samples and the concentrations of radioisotopes were determined using hyper-purity germanium (HPGe) detector in Bq/kg. The average concentrations of ²³²Th, ²²⁶Ra and ⁴⁰K were found to be 51.3, 23.29 and 290.3 Bq/kg respectively. Different hazard indices were also determined. The results showed that the average radium equivalent activity (Raeq), the absorbed dose rate (Dr), the annual effective dose equivalent (AEDE), the external and internal hazard indices (Hex, Hin) and representation level index (I_r) were: 119 Bq/kg, 56.41nGy/hr, 0.23 mSv/yr, 0.32, 0.39 and 0.85 respectively. The mean values of all indices were in good agreement with those of the international values. The measured activity concentrations for these radionuclide were compared with the reported data obtained from similar materials used in other countries and with typical world values.

Key words: Radioactivity Concentration, Radium Equivalent, Marble, Hazard indices, Annual Dose Rate, Natural Radioactivity.

**Physico – chemical characteristics of some mineral admixtures on
cement pastes produced in Yemen and Sudan**

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Abstract

The electrical conductivity of cement pastes can give an indication of the initial hydration of cement pastes and early formation of products. In this study, ordinary Portland cement pastes produced in Yemen and Sudan were prepared with two different mineral admixtures, namely silica fume and fly ash. This work is aimed to evaluate the effect of silica fume and fly ash on the hydration reaction of cement pastes up to 28 days , by determining the chemically combined water content and free lime of each paste at different intervals of time (3, 1 ,4 , and 28 days), and the electrical conductivity changes at different temperatures.

Key words: Portland cement, electrical conductivity, silica fume, fly ash ,hydration kinetics, hydration kinetics.

ZOOLOGY

Hypoglycemic effect of *Caralluma quadrangula* in normal and alloxan diabetic male rabbits

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Abstract

The aim of this study is to evaluate the hypoglycemic activity of *Caralluma quadrangula* (Asclepeadaceae), a traditional medicinal plant in Yemen, in normal and alloxan diabetic male rabbits. Forty healthy male rabbits weighed 1300-1500g were used in this study. Animals were divided into 2 groups: 20 normal rabbits and 20 alloxan diabetic rabbits. Normal rabbits were divided into 5 groups (4Animals in each group). Group 1 served as control, group 2 was orally treated with Amaryl (1mg/kg). Groups3,4 and 5 were orally treated with 50, 100, and150mg/kg.of aqueous extract of *Caralluma quadrangula* (CQ) respectively. Alloxan diabetic animals were divided into 5 groups in the same above mentioned pattern. The experiment was repeated three times. Firstly in the morning, secondly, after five days in the afternoon,, and thirdly, after another five days in the evening. The blood glucose level was estimated before and 1hr, 2hrs, 3hrs and 4 hrs after drug and doses of extract administration. Results showed that the different doses of (CQ) extract exerted a significant ($P<0.05$) short lived hypoglycemic effect in normal rabbits, and the different doses of (CQ) extract did not show any significant ($P>0.05$) hypoglycemic effect in alloxan diabetic rabbits.

Key words: *Caralluma quadrangula*, hypoglycemic effect, diabetes mellitus.

BOTANY

Effect of soil and water types on the germination of some Aden mountainous wild plants

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Abstract

The aim of the study is to germinate some of Aden mountainous wild plants with the purpose of growing, maintaining and protecting them from being extinguished and destroyed. On this basis, we worked throughout this study by collecting seeds and grow them in suitable environmental conditions inside a greenhouse at the Faculty of Education –Aden. Six species of mountainous wild plants, namely *Blepharis ciliaris*, *Reseda amblyocarpa*, *Moringa peregrine*, *Tephrosia nibica*, *taverniera glauca*, *Saltia paposa*, were selected.

The seeds of the above mentioned wild plants were grown in four kinds of soil: mountainous soil, coastal soil, Alwhat soil, and Bir Ahmed soil, and were aggregated by three kinds of water, namely exhaust water, Bir Ahmed water and drinking water. From these processing, the following results obtained: (1) the best kinds of soil are coastal soil, Bir Ahmed soil then mountainous soil, and (2) the best kinds of water are exhaust water and drinking water.

Key words: Wild plants, seeds germination, exhaust water .

CHEMISTRY

Physico-chemical properties of well water of Qashin ,Sihout city and some villages of Huswain district Al-Mahraa Governorate, Republic of Yemen

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Abstract

Seventeen water samples collected from Qashin city ,Sihout city and some village's of Huswain district to evaluate water quality by study it's physicochemical properties. the following instruments used :pH meter3305 Jenway to measure water pH , WTW Turb 555 instrument to measure the turbidity, pH/cond level-1used to measure the electrical conductivity and total dissolved substance, the sulphate ,nitrate and phosphate ions estimated by using spectrophotometer model SPECORD 205 and atomic absorption spectrophotometer model VARIO 6 used for estimating the essential elements and heavy metals.

The results of analysis are: pH(4.19-8.45) ,turbidtry (0.161-9.194 N.T.U), electrical conductivity (1290-21900 $\mu\text{s/cm}$), and the other properties expressed in mg/liter as :total dissolved solids (514-25080), total alkalinity(75-354.1) ,

chlorides (203.48-6977.97) , nitrates (3.1-17.94) , sulphates (58.14-756.0),phosphates(1.97-4.43) , sodium (23.28-959.4), potassium(9.93-143.4) ,calcium(90.0-1500) , magnesium(11.08-371.2) ,total hardness (270.5-5275.6) and for the heavy metals ; lead (up to 0.264), cadmium (0.0009-0.025) , cobalt (0.009-0.0692) , copper(0.0067-0.0328) , manganese(0.0177-0.5278), iron (0.0157-0.1066) and zink (up to 0.073).

Results were compared with the local and the World Health Organization standards and it was found that the Qashin-Rakhout sample is the most suitable source for drinking uses and 83% and 35% of water samples are contaminated by lead and cadimium respectively.

Key words: Well waters , Physico-chemical properties, heavy metals, atomic absorption, Al-Mahraa governorate.

ENVIRONMENT

Study of the most important expected problems in water desalination plants on networks of public , domestic water and suggestion of suitable solutions

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Abstract

Recently, Libya conclusion goes away to establish a giant desalination plants for the purpose of supplying urban water, e.g. desalination plant thermal, for Zoara city to supply residential areas in all popularity of- Al-Nokat Al Khams with water for human and domestic consumption.

On this basis, We have in this research study of the most important problems that can be occurred for potable water supply system and distribution pipes system inside houses resulting from the use of water produced from such units. We studied the effect of supplying water for the housing and Industrial units for Al-Zawya refinery company from the plant destination within the factory by specifying the nature of the water after the mixing process, if that is the cause of corrosion or not.

We have adopted in our calculations the Reyznar stability index (IR) using volumetric analysis methods , pH meter and conduct meter as the result of this study is “water causes corrosion before and after the mixing process”, and we suggest the solutions for solving the problem of corrosion of such networks.

Key words: Ryznar stability index, desalination.