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ENGLISH TITLES

BIOLOGY

Biological analysis of drinking water in some primary and secondary schools at Aden Governorate

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Abstract

Present study analyzed drinking water in 24 primary and secondary schools in Aden governorate for the period (January- June 2006). The study estimated the contamination of drinking water and its safety to public. Physical properties of water such as pH, TSS, BOD were recorded. The study revealed 7 water samples were polluted by *E. coli* and coliform bacteria. Presence of *E. coli* and coliform bacteria indicate inadequate treatment of drinking water, which require immediate attention.

Key words: Drinking water, *E. coli*, Coliform, Contamination

Antimicrobial activity of selected seaweeds obtained from the south east coast of Tamil nadu, India

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Abstract

Few marine algal species belonging to the group of Rhodophyta and Phaeophyta namely *Laurencia obtusa*, *Sypiridia filamentosa*, *Acanthophora spicifera*, *Polysiphonia sp.*, *Padina tetrasomatica*, *Dictyota dichotoma*, *Stoechospermum marginatum* and *Hydroclathrus clathratus* were collected fresh from the south east coast of Tamil Nadu. Cold extraction of the biomass was done with methanol and sterile distilled water. The methanol extracts of all algae were fractionated between ether and aqueous solutions in a separating funnel. Antimicrobial activities of all the crude extracts were studied against a wide range of bacterial and fungal strains. Methanol and partitioned ether extracts of all the algal samples except that of *Acanthophora sp.* and *Centrocerrus sp.*

exhibited wide range of antimicrobial activities, in particular, the extracts of *L.obtusa* actively inhibited the growth of all the test organisms used for the study and the extracts of *Hydroclathrus clathratus* were found to exhibit the second highest antimicrobial activity.

Key words: Antimicrobial activity, Bioactive Compounds, Phaeophyta, Rhodophyta, South East Coast of Tamil Nadu.

CHEMISTRY

Benylation and 1D NMR spectroscopic studies of some phenolic aldehydes

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Abstract

Several benzyl aldehydic ethers (C1–5), were synthesized and characterized by the reactions of o–Vanillin, vanillin, o–hydroxy benzaldehyde, p–hydroxy benzaldehyde and p–syringaldehyde (A1–5) with benzyl halide in basic media at room temperature in acetone as solvent. The FTIR, 1H NMR and 13C NMR experiments were performed to confirm the structures.

Keywords: Benylation, phenolic aldehydes, TBAI, Proton NMR, 13C NMR.

ENGINEERING

A general treatment of ground faults in multiphase transmission systems

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Abstract

This Paper is devoted to the extension of the existing three phase technique for a generalized treatment of ground faults in multiphase transmission systems. The expressions derived in the paper for sequence currents and phase fault currents are applicable to any phase order and fault type and can account for transposed lines as well as untransposed. Several illustrative calculations are presented to demonstrate the validity of expressions derived and to obtain the performance of multiphase system during fault conditions.

Keywords: Power system, Fault Analysis, Sequence and Phase Currents.

Fault diagnosis of pumps through vibration analysis

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Abstract

Maintenance of plant and equipment is an area of activity, which in recent decades has received a lot of attention from management consultants, because the cost associated with machinery maintenance is a major portion of operating expenses. Moreover, the system service life can be extended if suitable maintenance policy has been adopted. Vibration analysis is used as a predictive maintenance tool in a wide variety of industrial areas, especially for rotating and reciprocating machines. In this paper, vibration analysis is applied for more than 20 pumps in Aden Refinery Company. A set of measuring instruments has been installed and measurement of vibration signals has been taken from an accelerometer placed at different positions. These signals are analyzed, and the results obtained indicate the importance of this technique in the detection of pump faults.

Keywords: Maintenance, Pumps, Vibration, Fault diagnosis

GEOLOGY

**Impact of urbanization on ground water quality of Sana'a Basin,
Republic of Yemen**

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Abstract

The normal natural ground waters in the northern part of Sana'a Basin are slightly alkaline (pH 7.16 - 8.14) and the sodium/ bicarbonate water zone is obvious. The high Na in groundwater owing to the silicate rocks of mafic origin by cation exchange. The hydrogeochemical and microbiological investigations of shallow and deep groundwater wells in the northern Sana'a basin have shown contamination of some wells. Due to the contamination, the natural fresh water types (Na-HCO₃) were changed to mixture of cations and anions. The sources of contamination are mainly from Sana'a city sewage disposal. The wastewater infiltration to the beneath layers and contamination of groundwater can be recognized by the high concentration of the wastewater indicator constituents such as TDS, NO₃ and Cl, SO₄, in addition to the microorganisms. The positive correlation between numbers of FC and NO₃- confirm such conclusion. Urban

wells have shown high solute concentrations and high correlation matrix than those of less-urban wells. However, there was no sign of contamination in the groundwater well samples collected from Al Azrakain wells around Sana'a landfill area, this may be attributed to physical and chemical attenuation processes, topography, and to the environmental conditions prevailing in the area.

Keywords: Sana'a basin, Urbanization, Hydrogeochemistry, Contamination, Groundwater, Wastewater, Landfill, Yemen

MATHEMATICS

A Numerical treatment of imploding shock waves in a chemically reacting gas dynamics

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Abstract

In this paper, a numerical scheme for quasilinear hyperbolic system of partial differential equations in non-conservative form has been developed. The scheme is then applied to study the unsteady motion of imploding shock waves in a chemically reacting gasdynamics. The effects of activation energy on the convergence time and the growth rate of shock strength are obtained. In the process, the detailed behavior near the axis at the time of shock coalescence is studied. The effect of various controlling parameters on the numerical results are also studied.

Key words: Imploding shock waves, chemically reacting gasdynamics, numerical scheme.

MEDICINE

The management of colorectal cancer patients in Al-Gamhouria Teaching Hospital from June 2004 to December 2006.

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Abstract

Colorectal cancer (CRC) is the third most important cause of cancer mortality overall, with similar number of deaths in both sexes. If it is detected early, it will be curable by surgery. Our aim is to assess the management of CRC in patients admitted to Algamhouria Teaching Hospital in Aden.

Patients admitted with CRC, during the period June 1st 2004 to December 31st 2006, were prospectively studied. Study variables included sex, age, type of admission, residency, special habits, socio-economic level of the patients, site of the tumor, clinical picture, type of surgical treatment and postoperative complication, as well as macro- and microscopic examination of the specimens.

The total number of enrolled patients were 50, 54% of them (27) men and 46% (23) women. Overall mean age was 51.2 ± 11.4 years (range 17 – 80 years) and higher frequency of CRC was in patients in the sixth decade (46%). Elective admission was reported in 66% of them, and emergency in 34%. Most of the patients (98%) presented general weakness and signs of anemia. The frequent site of the tumor was rectum (42%), followed by left colon and sigmoid (34%). Abdomino-perineal resection was performed in 36%, followed by left hemicolectomy in 32%. The most frequent post-operative complication was infection - in 12.24%. The most frequent macroscopic type of the tumor was fungating in 66%, whereas the microscopic pattern identified was adenocarcinoma in 94%. Lymph nodes were involved in 46% of cases, and liver metastases found in 8%.

In our patients, CRC had been diagnosed very late. There should be high suspicious index for CRC in patients with bowel complains, especially in their 5th and 6th decades of their life.

Keywords: colo rectal cancer, tumor, adenocarcinoma

Diabetic foot: Clinical presentation and management in Al-Gamhuorea Teaching Hospital.

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Abstract

The aim of this study is to determine the mode of presentation, medical and surgical treatment, and prevention of diabetic foot. This is a prospective descriptive study performed in the period from June 2004 – December 2005. Eighty-three patients with diabetic foot lesion were presented to Al-Gamhuorea Teaching Hospital. Data of these patient were collected for sex, age, duration of diabetes, blood sugar control, mode of presentation, presence of peripheral neuropathy, peripheral vascular disease, concurrent medical illness (ischemic heart disease and chronic renal failure), microbial flora, treatment by antibiotics, surgical treatment and duration of healing. Majority of patients were male above 50 years 68.7%, mean age 58.3 ± 12 and female 31.3%. Most of them were type 2 on oral hypoglycemic drugs (89.16%). Blood sugar was uncontrolled in 77.1% of them. History of trauma preceding diabetic foot infection was present in 74.7%. Foot ulcer was the most common presentation in 47% of patients. There was a significant association between the peripheral neuropathy and the following risk factors: duration of diabetes more than ten years 100% ($p = 0.0000$), poor glycemic control 95.3% ($p = 0.000$) and trauma 83.9% ($p = 0.0000$). There was also a significant relationship between the major limb amputation and some predictive variables: previous foot ulcer 35.3% ($p = 0.0000$), poor glycemic control 17.2% ($p = 0.04$), peripheral neuropathy 17.7% ($p = 0.03$), peripheral vascular disease 75% ($p = 0.000$), and heart disease 33.3% ($p = 0.01$). Debridement done for 49.4% and toe/s amputation for 30.2%, however 11 patients (13.3%) had major amputation. Staphylococcus aureus was the most common organism isolated in 34.9%. Duration of healing was 9-16 weeks for most of the patients 63.4%. Diabetic foot infection is a common health problem in Al-Gamhuorea Teaching Hospital, particularly among men. Poor glycemic control, as well as peripheral neuropathy and peripheral vascular disease are the most precipitating factors, which can be prevented. Control of blood sugar, good debridement, and proper dressing can lead to early and complete healing in most of diabetic foot lesions.

Key words: Diabetic foot, diabetic foot ulcer, peripheral neuropathy, peripheral vascular disease.

The main causes of tooth extraction in adult population in Aden-Governorate

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Abstract

The aim of this study is to study the pattern of and reasons for permanent tooth extraction in a group of Aden patients attending a dental clinic in the south of Yemen.

A simple clinical survey was done on Aden population sample that has undergone or planned for tooth extraction.

A total of 580 permanent teeth were extracted from 365 patients ranging in age from 14 to 78 years during the eight-months study period. Males were 52.6% (n=192) and females formed 47.4% (n=173). Overall, periodontal disease was the most frequent reason for tooth extraction (51,2%) (n=297), Caries (39,6%) (n=230), surgical indications (5,2%) (n=30) and patient request (4,0%) (n=23). Caries was the main reason for tooth loss in patients up to 50 years. However, periodontal disease became the principal reason in patients aging 51 years and over. Posterior teeth represented the highest percentage of tooth extraction (79.3%) (n=460).

Both periodontal disease and caries were the main reasons for tooth extraction in the South of Yemen, so proper oral health system, including efficient programs focusing on prevention and treatment of these diseases, should be created and developed.

Keywords: Tooth extraction, reasons, periodontal disease, caries.

Osteosarcoma of the mandible: Clinico-pathological analysis of eight cases.

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Abstract

The aim of this research paper is to review cases of osteogenic osteosarcoma of the jaw bones diagnosed at Al-Gamhouria Teaching Hospital, Aden Governorate during 2001-2007.

The data files of eight patients suffering osteosarcoma and operated at Al-Gamhouria Teaching Hospital, between January 2001-December 2007 were analyzed for age, gender, and histological type, method of treatment, radiological study and follow up for 6 years.

Eight patients were studied during 6 years , with equal sex distribution 1:1 M:F ratio, with mean age 0f (26 year). Most of them show possessive swelling and pain (n=8). Radiological studies varies from radiolucent (n=6) to mixed radiolucent and radio-opaque with sun burst appearance (n=2) ,histologically most of the cases (n=5) with low grade conventional osteosarcoma with higher stage of disease according to American Joint Committee of Cancer . Hemimadiblectomy with post operative radiotherapy was the mainstay of treatment of most of the patient (n=7)

Conclusion: The result of the current study represent s the importance of negative surgical margin in the only significant and predictor of overall and disease specific survival.

Key words : Osteosarcoma , mandible, Yemen .

PHARMACY

In Vitro antibacterial activity of some Yemeni medicinal plants

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Abstract

Extracts from different tissues of 11 Yemeni medicinal plants- *Adansonia digitata* L, leaves; *Caralluma penicillata* (Defl.) N.E.Br., succulent stems; *Cometes abyssinica* (R.Br.) Wallich., roots; *Cupressus sempervirens* L. leaves; *Ficus vasta* Forsk., fruits; *Heliotropium subulatum* (DC.) Martell, aerial part; *Lavandula pubescens* Decne., aerial part; *Pergularia daemia* (Forsk.) Chiov., leaves; *Pulicaria orientalis* Jaub.& Sp., aerial part; *Reichardia tingitana* (L.), leaves and *Tagetes minuta* L., aerial part, were tested for antibacterial activity against three gram-positive bacteria, *Staphylococcus aureus* (ATCC 29737), *Staphylococcus epidermidis* (ATCC 12228) and *Bacillus subtilis* (ATCC 6633) and two gram-negative bacteria, *Escherichia coli* (ATCC 10536) and *Klebsiella pneumoniae* (ATCC 10031), using a qualitative agar diffusion test. Extracts from 7 plants were found to possess various antibacterial activities against one or more of the tested microorganisms. Extracts from *Lavandula pubescens* Decne and *Pulicaria orientalis* Jaub. & Sp. were the most active.

Keywords: Antibacterial activity, Yemeni medicinal plants.

**Screening of antioxidant and antifungal properties for extracts
from endemic Soqotran medical plants**

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Abstract

A total of 50 different extracts from 18 endemic Soqotran medicinal plants belonging to 12 plant families were screened for their antioxidant activity, using the DPPH free radical scavenger assay and their antifungal activity against the phytopathogenic fungus *Cladosporium cucumerinum*, using a microbioassay on TLC plates.

Of the extracts tested, 8 out of 25 methanol extracts showed more than 50% antioxidative activity at a concentration of 200 µg/ml. Extracts of *Kalanchoe farinaceae*, *Caralluma socotrana*, and *Boswellia socotrana* were the most active ones.

Nine out of 50 extracts exhibited a fungitoxic activity. Chloroform extracts of *Pulicaria stephanocarpa* leaves and roots showed at an application amount of 400 µg inhibition zones of 20 ± 1.0 and 18 ± 0.7 mm, respectively. The chloroform extract of *Kalanchoe farinaceae* leaves exhibited stronger antifungal activity (18 ± 0.8 mm inhibition zone) than the methanolic extract (15 ± 0.3 mm inhibition zone). The most active methanolic extract was obtained from *Acridocarpus socotranus* leaves, with a 18 ± 0.4 mm inhibition zone for 400 µg applied.

Key words: Plant extracts; antioxidant; antifungal; Soqotra

The use of antimicrobial drugs preoperatively and its effect on postoperative complications in Children Surgical Ward in Al-Gamhoria Teaching Hospital

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Abstract

With the objective to identify different aspects of the use of preoperative antibiotics and its relationship with postoperative complications, one hundred and three medical records from children who were admitted in the Children Surgical Ward in Al-Gamhouria Taching Hospital from January to October 2004 were randomly selected and studied. Age ranged from 1 day to 15 years. In 45.6% patients, antibiotics were used preoperatively; also in 74.3% of the septic operations, antibiotics were used preoperatively. Ninety percent of the cases diagnosed were having an abscess and 58.8% were diagnosed as appendicitis and received antibiotics preoperatively. Postoperative infections appeared in 11.1% and 10% of these cases respectively. In 77.3% patients in the group of age 10-15 years old, antibiotics were used preoperatively. There were no differences in patients who used antibiotics preoperatively and in the hospitalization period.

It is concluded that antimicrobial drugs used preoperatively can reduce the risk of postoperative infections, but do not prevent it because primary prophylactic measures against postoperative infections include a group of factors like antiseptic technique, individual patient characteristics, patient's preparation before surgery, and postoperative patient care.

Key words: Antimicrobial drugs, pediatric surgery, postoperative infections.

Effect of extract of Aloe vera, Querous infectoria and Catha edulis on the isolated rabbit duodenum

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Abstract

The aim of this study is to detect the pharmacological effect of aloe (fresh plant and dried Aloe socotrana), gall and the extract of khat leaves (Catha edulis Forsk) on the isolated rabbit duodenum.

Extracts of aloe, gall and khat leaves were assayed using isolated rabbit duodenum technique. Mechanical activity of the tissue was registered with a

frontal ink isotonic lever on a kymograph drum under continuous oxygen bubbling.

The aqueous extract of gall showed a contraction, which was persistent after incubating the tissue with atropine. Fresh extract from the plant aloe as well as aqueous extract of the dried aloe reduced the tone of the mechanical activity of the isolated rabbit tissue. Incubating the tissue with propranolol did not change this response. Ethyl acetate extract of khat leaves from Aldhalae and Yafae provinces did not modify the tone of the tissue, but Yafae khat extract changed the motility.

The findings suggest that the gall induced contraction was not based on cholinergic activity, while relaxation, produced by aloe, seemed not to be associated with adrenergic agonism. Yafae khat leaves disturbed the mechanical activity of the tissue.

Key words : Aloe, Gall Khat, isolated rabbit duodenum, Kymograph.

PHYSICS

Electromodulation spectroscopy study of semiconductor structures

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Abstract

We are presenting here few examples of the application of electromodulation techniques, e.g. photoreflectance and phototransmittance, as excellent methods for the investigation of semiconductor device structures. The discussion is narrowed down to low-dimensional structures used as an active part of the infrared optoelectronic devices: from new material (GaInAsN) double quantum wells, good candidate for 1.3 μm and 1.55 μm telecommunication lasers, through InGaSb/GaSb quantum wells pretending to the application in the infrared gas sensors, to 980 nm InGaAs/GaAs quantum dot laser pump source for erbium doped fiber amplifiers (EDFA). Contactless modulation techniques like photoreflectance or phototransmittance can be successfully used for the investigation of low-dimensional systems being an active part of the semiconductor device. The derivative-like spectra gives sensitivity high enough to probe excited states even in small volume objects like self-assembled quantum dots, and also at room temperature.

Keywords: Electromodulation spectroscopy, Photoreflectance, Photomodulation, Quantum wells, Semiconductor structures.

A study of the mechanical properties of hybrid laminated polymer composites

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Abstract

To produce hybrid laminated polymer composites, we fabricated tensile specimens of matrix material consisting of an acrylic resin with a polymethyl methacrylate base. The reinforcement layers are perlon and glass fiber in the form of two hybrid composites each with twelve reinforcement layers which were fabricated using vacuum forming. Composite(1) consists of eight perlon layers and four glass fiber layers, while Composite(2) consists of four perlon layers and eight glass fiber layers.

They were subjected to tensile tests using a Universal Testing Machine. From these results, we found that the tensile strength and modulus of elasticity of Composite(1) are higher than those of the matrix material by 27.6 % and 83.3 % respectively. While in the case of Composite(2), the tensile strength and modulus of elasticity increased by 96.5% and 133% respectively as compared to the matrix material. These results lead to better enhancement in the tensile properties of composites which is obtained through the increase of glass fiber content in the composite, since these fibers possess high tensile strength and stiffness.

Key words: Mechanical Properties, Hybrid, Polymer, Tensile.

SHORT COMMUNICATION

MIDICINE

Acute – on – chronic subdural haematoma: a rare complication after spinal anaesthesia

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Abstract

A 70 years old man with undiagnosed chronic sudural hamatoma underwent repair of Rt. Inguinal hernia under spinal anesthesia.

The patient complained of a postoperative headache and a subsequent computed tomography brain scan showed an acute – on –chronic subdural haematoma, with midline shift and impending coning. The patient recovered

completely after surgical decompression. There is difficulty in diagnosing chronic subdural haematoma in the elderly patient especially with no history of trauma, along with the differential diagnosis of headache, following spinal anaesthesia in this age group.

Key words: Acute subdural haematoma, headache, spinal anesthesia.

ARABIC TITLES

AGRICULTURAL SCIENCES

A study of some chemical changes in banana fruit during ripening

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Nasir' sCollege of Agriculture – Aden University

Abstract

This study was conducted in the years 2005 and 2006. The study aims to investigate some chemical changes which occur in banana fruit during ripening in two different ripening methods:

1- The artificial ripening method in a cold storage room with temperature $21\pm 1^{\circ}\text{C}$, after dipping the fruits in Ethrel solution (1000ppm) for 5 minutes.

2- The traditional method, in which the fruits are put in plastic boxes and enrolled with journals. Then these bananas are kept in normal room temperature about 36°C and 30°C for the 2005 and 2006 experiments, respectively. In addition, the study also includes investigation of the changes which occur during different ripening periods(3,6 and 9 days). From the results of this study, we can see that the difference between the two ripening methods in total sugars(TS), reducing sugars(RS), sucrose, and total soluble solids(TSS) were not significant in 2005 and 2006, the six day ripening period showed the highest significant increasing rates for (TS), (RS), sucrose and (TSS) in both years compared to the other ripening period whereas the artificial ripening method showed significant decrease in chlorophyll content in comparison with the normal room ripening method in both years.

Keywords: Banana, ripening, Cavendish subgroup, chemical changes.

**Effect of some plant extracts on growth inhibition of
*Macrophomina phaseolina***

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Abstract

The study showed that water extracts of plants, such as, *Azadirachta indica*, *Thevetia neirefolia*, *Citrullus colonynthis*, *Datura stramonium*, *Nerium oleander*, *Eucalyptus camaldulensis*, save effect on growth of the *M. phaseolina*, the causative factor of charcoal root rot on *Sesame Sesium indicum*.

The results showed the efficiency of all treatments compared with control. The highest effect was given by *T. neirefolia* extract as 0.7 cm fungous growth inhibition, while the lowest was given by *E. camaldulensis* extract as 3.9 cm. Water extracts of plants oil of: *Azadirachta indica*, *Thevetia neirefolia*, *Citrullus colonynthis* and *Datura stramonium* at concentration of 1,5 and 10% were tested. The lowest growth inhibition was given by *D. stramonium* extract (4.2 cm) and the highest effect was that given by *A. indica* (2 cm) at concentration of 10%. Extracts of *T. neirefolia*, showed only 77.8% growth inhibition.

Key words: plant extracts, *Macrophomina phaseolina* fungi, plant oils.

BIOLOGY

**Identification of some microorganisms in Al-Arish Sewage Water
Treatment Station**

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Abstract

The study aims to classify some microorganisms, which are reproduced in Al-Arish station for sewage water treatment. The result has revealed the presence of *Coli* form bacteria, Sulfur bacteria, Cyanobacteria, Green algae and Protozoa. Those organisms play important role in degradation of organic compounds in wastewater.

Keywords: Sewage water, treatment, Bacteria, Algae, Protozoa.