

ENGLISH TITLES

BIOLOGY

Evaluation of Widal test in diagnosis of typhoid fever among patients in Aden, Yemen

Khaled Nasher Kahtan

Department of Biology and Chemistry, Radfan Education Collage, University of Aden

Abstract

Salmonella typhi is strictly human pathogen and has no animal reservoir. The laboratory diagnosis of typhoid fever depends upon either clinical investigation or the detection of titers of agglutination of serum antibodies (Widal test). 216 Yemeni patients with suspected typhoid fever, were investigated with Widal test, slide agglutination test and stool culture. The Widal test showed different results which then compared with conventional broth and solid culture of, MacConkey (MA), Salmonella-Shigella agar (SSA), Bismuth Sulfite Agar (BSA), Xylose Lysine Deoxycholate (XLD) and Kligler Iron Agar (KIA). The presence of *S. typhi* was in 4 patients (1.85%), whereas *S. para typhi AB* was detected in 24 patients (11.11%). The stool cultures and biochemical tests the existence of *S. typhi* the causative agent of typhoid fever. Then the typhoid fever was further confirmed by the API 20E system.

Key words: *Salmonella typhi*, *Salmonella paratyphi AB*, typhoid fever, Widal test.

Diarrhea among patients attending different hospitals and dispensaries in Aden, Yemen

Khaled Nasher Khatan*and Nagat Ali Muqbil **

*Faculty of Education, Radfan, Biology Department, Aden University

**Faculty of Education, Aden, Biology Department, Aden University

Abstract

A diarrhea patients have been investigated at different hospitals dispensaries and clinical centers (private hospitals and centers are not included), during the period of January 2003-December 2005. A total of 55587 diarrhea cases have been recorded and divided into two categories: bloody diarrhea (BD) and non bloody diarrhea (NBD). Out of these total cases, 3132 belong to bloody diarrhea (5.6%), while the total number of non bloody diarrhea was 52455 (94.36%). Inceasable rate of diarrhea have been noticed, being at high level in the year 2005. The main causative agents of diarrhea were protozoan parasites (*Entamoeba histolytica*, *Giardia lamblia*, and *Entamoeba coli*), and bacterial agents (*Salmonella spp.*, *Shigella spp.*, and *Escherichia coli*). The overall

contribution of these pathogens in diarrhea infection was (6.5%), indicating protozoan and bacteria that might be responsible for diarrhea infection. Others factors have not been included.

Monthly variations as well as incidence among gender and different age groups were also evaluated. A total fatality ratio among patient of bloody diarrhea was recorded (0.76%) and was (0.169%) of non bloody diarrhea.

Key words: bloody diarrhea, non bloody diarrhea, parasites, bacteria, mortality

CHEMISTRY

Efficient benzylation of *o*-Vanillin using TBAI as catalyst and the crystal structure of the product

Mohammed Hadi Al-Douh, Shafida Abd. Hamid* and Hasnah Osman
School of Chemical Sciences, Universiti Sains Malaysia (USM), Minden 11800,
Pinang, Malaysia. * E-mail: shafida@usm.my; Tel.: +6-04-653-3888; Fax:
+6-04-657-4854.

Abstract

An efficient benzylation of *o*-vanillin to produce 2-benzyloxy-3-methoxy-benzaldehyde, **3** is discussed. Addition of tetra-*n*-butylammonium iodide (TBAI) was found to accelerate the reaction and produced the target compound as single crystals. In the absence of TBAI, an overnight **3** yielded with lower product.

Keywords: Benzylation, Proton NMR, ¹³C NMR, X-ray Crystallography.

ENGINEERING

Harmonics estimation of a power system network

Shehab Abdulwadood Ali¹ and Pavel Santarius²

¹ Depart. of Physics, College of Education-Saber, University of Aden

² Depart. of El-measurements- Faculty of El-Eng. & Info. – Tech.Univ. of Ostrava – Czech Republic

Abstract

Harmonic study must be done in the engineering design stage of industrial systems that include harmonic producing equipment, alongside load flow and short circuit studies. The interaction between load flow and harmonic study should lead to the best system configuration design, optimal operating conditions and proper size and location of power factor correction capacitors. This study is about the modeling of electrical power network elements, which is useful in many software algorithms concern to the harmonic study.

Keywords: harmonic study, modeling of elements, harmonic voltage, harmonic current and harmonic impedance.

Development of liquid ring vacuum pumps

Yu.V. Rodionov, Sameh S.S Hanooni*, M.M. Sviridov and D.V. Nikitin

Department “Theory of Machines Mechanisms and Machine Parts”, TSTU, Russia

*** Faculty of Education and Applied Sciences –Hajjah, Sana'a University.**

Abstract

The operating conditions of liquid ring vacuum pumps and factors which influence the vacuum treatment process efficiency have been considered. Trends in liquid ring vacuum pump designing allowing to build optimal models illustrated by the concrete example have been suggested.

Key words: liquid ring vacuum pumps specific capacity , specific mass.

Maintenance planning of pumps in Aden Refinery Company

. Moh'd Aqeel Alattas and Mahmoud Saeed Saif

Mechanical Engineering Department – Faculty of Engineering – University of Aden

Abstract

Aden Refinery Company is one of the most important installations in Yemen. It has different production units. Each unit contains different sizes and types of centrifugal pumps, reciprocating pumps and injection pumps. These pumps are very critical in providing crude oil, crude products and seawater for refinery cooling. Hence, high reliability is warranted to ensure optimum refinery availability.

This work outlines the actions implemented on the pumps of Aden Refinery in order to improve their overall reliability. To realize this, a methodology that permits the determination of best method of maintenance to be used by Aden Refinery Company is presented. This methodology has been applied to more than 60 pumps of different units (No.1 crude oil unit, No.2 crude oil unit, Vacuum and Asphalt unit) in Aden Refinery Company. Results obtained clearly show that the method is more efficient and it reduces the maintenance cost as minimum as possible.

Keywords: Preventive maintenance, corrective maintenance, Weibull distribution, pumps, reliability

Harmonics in output voltage of A C voltage controllers

**Moh'd Zaid A. Karim, A. Hakim Saeed Noman and Nagib Ahmed Noman
Department of Electrical Engineering, Faculty of Engineering, University of
Aden, Maalla, Aden, Yemen**

Abstract

AC voltage controllers are used in applications requiring controlled voltage. However, the controlled voltage so obtained is not sinusoidal, it contains harmonics. These harmonics appears due to phase modulation of firing pulses to the thyristors. Further, the nature of the load affects the amplitude of these harmonics. In this paper, the order and amplitude of harmonics of the output voltage of a single phase voltage controller are investigated, considering an R-L load. Effects of firing angle and load time constant on the amplitude of the harmonics and total harmonic distortion are investigated and presented.

Keywords: AC voltage controllers, Harmonics, Time constant.

ENVIRONMENT

Seepage studies of dye-house sludge in soil strata

V. Hemalatha and M. Palanivel.

**Department of zoology, PSG College of Arts and Science
Coimbatore, Tamilnadu, India. profhema_14@yahoo.com**

Abstract

The present study deals with the demonstration of the effects produced due to the sludge used as a landfill. This was carried out using seepage studies with the sample containing a combination of soil and sludge, and the controls were soil and sludge separately. The leachates were collected periodically, using water as the elutant. The sludge was analysed for its Physico-chemical properties before being used as a landfill. The pollutional parameters, such as pH, total dissolved solids (TDS), alkalinity, hardness and metals, were characterized for all the leachates and were also compared. The validation studies disproved the efficacy of the sludges as an agent for landfill.

Key words: Land filling, soil percolation, dye-house sludge.

MATHEMATICS

A study on hypergeometric-type generating zeta function

Mubarak A. H. Al-Qufail
Department of Mathematics, Aden University, Aden
Kohrmakssar P. O. Box 6014

Abstract

In this paper, we introduce and study two hypergeometric-type zeta function. Our aim is to derive their basic properties, including integral representations, sums, and generating functions. A number of Known and new results are shown as special cases of our formulas.

Key words: hypergeometric function, generalized zeta function, gamma function.

MEDICINE

An epidemiological profile of malaria in Aden

Mohamed Abdullah Aklan¹, Abdul Samad Taresh², Hael Saeed Abdulla³ and Areeg Abdul Samad Taresh⁴

^{1,3}Department of Internal Medicine, Faculty of Medicine, University of Aden

²Department of Community Medicine and Public Health, Faculty of Medicine

⁴Hemodialysis Center, Al Gumhoria Teaching Hospital, Aden

Abstract

In order to study the epidemiology of malaria in Aden, we retrospectively collected and analyzed data of patients examined for malaria in all governmental health institutions in Aden Governorate, during the year 2005. The total examined patients were 46201 and the identified positive malaria cases were 2450. The incidence rate of malaria infection was 412 per 100000 people. Malaria species were mostly due to *P. falciparum* (96.4%), while *P. vivax* was (3.6%). The predominant malaria infections occurred in winter (November – March), showing a seasonal variation that coincides with the increased movement of people, especially workers from other governorates to Aden.

The most malaria cases were observed in Sheikh-Othman District (52%) followed by Khormaksar District (14.5%) and Al-Mansoor District (10.7%). A significant increase noted in the number of cases among children less than 10 years and people aged 10 – 49 years as a whole and in both genders. The difference between male and female patients was not significant ($P > 0.05$). However, we concluded that the continued presence of malaria in Aden poses a significant health problem, especially in the presence of the malaria vector.

Key words: Malaria, incidence rate, district, Aden

Current status of management of benign bleeding peptic ulcer in Al-Gamhouria Teaching Hospital, Aden, Yemen

Riyadh Noor Moh'd Hati, Ali -Karama bin Taleb and Zaki Omer AlKathiri

Department of Surgery, Faculty of Medicine & Health Sciences, University of Aden

Abstract

We aimed to explore and analyze current status of bleeding peptic ulcers in surgical patients. The study was carried out at the Surgical Department of Al-Gamhouria Teaching Hospital, Aden-Yemen. It was divided into 2 parts. Group 'A' patients, admitted with bleeding peptic ulcers during the period May 1998 to April 2003, were retrospectively evaluated, and the prospective group 'B' that included patients admitted during the period May 2003 to April 2006. One hundred and twenty patients were enrolled in the study; 75% were in group 'A' and 25% in 'B'. Men were (103) and women (17), with a ratio of (6.1:1). Overall mean age was 43.4 years (ranging 17 to 70 years) with 23 patients (19.17%) over 60 years. Endoscopic activity within the first 24 hours in group 'A' was (55.56%) and zero in 'B'. Ratio of bleeding duodenal to gastric ulcers was (2:1). Bleeding was massive and /or recurred in (32.5%) of patients, with transfusion of 3-9 units of blood (mean – 5.38). Surgery was performed only in the retrospective group – in (11.11%). Hospital stay time was for group 'A' and 'B' 17.5 and 9 days respectively. Overall death rate was (8.33%); it was less in group 'A' than 'B' – (6.67%) and (13.3%) respectively. In patients treated only conservatively, death rates in 'A' and 'B' were (7.5%) and (13.3%) respectively. Nevertheless, death rates were statistically not significant. Overall outlook was quite alarming. Lack of good administration, limited resources, and lack of necessary equipments played the major role in improper management of these patients. To improve the situation, it is recommended to prepare guidelines and establish a well equipped and well functioning endoscopy unit.

Key words: Peptic ulcers, complications, bleeding, re-bleeding.

The significance of ultrasound in diagnosing gallstone disease

Riyadh Noor Moh'd Hati, Ali Karama bin Taleb and Aref Moh'd A.Karim

Department of Surgery, Faculty of Medicine and Health Sciences, University of Aden

Abstract

The efficacy and sensitivity of transabdominal ultrasonography (TUS) for detecting gallstones in patients with biliary colic and biliary tract diseases was studied. A prospective study was carried out between February 2003 and February 2007, in the Surgical Department of Al-Gamhouria Teaching Hospital. Patients with Ultrasound diagnosis of gallbladder (GB) and common bile duct (CBD) stones diseases (including 2 cases with biliary colic like pain and negative TUS result) were admitted to the hospital for cholecystectomy and, in indicated cases for choledochotomy. Presence or absence of stones were noted. CT-

scanning was ordered in patients with obstructive jaundice. The computer program Quickcalcs of Graphpad software was applied for data processing (<http://graphpad.com/quickcalcs>). TUS was performed on 114 consecutive patients; 103 (90.35%) were women and 11 (9.65%) were men. The ages ranged between 20 to 80 years, with mean age of 43.62 years. For gallbladder stones; there were 108 True Positive, 2 True Negative, 3 False Positive and one False Negative scans, yielding 94.74% sensitivity, 66.67% specificity, and 96.49% accuracy. Positive Predictive Value (PPV) for gallbladder stones was 16.66% and Negative Predictive Value (NPV) was 97.22%.

Nine patients out of 114 (7.9%) had associated with common bile duct obstruction, 6 women (5.26%) and 3 men(2.63%), with 7 True Positive, one False Positive, and one False Negative results for choledocholithiasis, yielding 77.78% sensitivity, 92.11% specificity, and 98.25% accuracy. PPV was 45.78%, whereas NPV was 97.98%. The Ultrasound provided an effective and reliable means for the diagnosis of GB and CBD stone diseases.

Keywords: Ultrasound, gallstones, gall-bladder, bile ducts, jaundice.

The operative removal of mandibular third impacted molars: a two-year follow up study

Ahlam Hibatulla Ali Ismail and Muhgat Ahmed Ali Abdo
Department of Biomedical Dental Sciences, Faculty of Medicine and Health Sciences, Aden University

Abstract

This prospective study aims to investigate the reasons for mandibular third impacted molars extraction. It also addresses the effect of patient's age, gender, type and post surgical problems. The study sample comprised 204 Yemeni dental patients in Aden who had had mandibular third molar extractions. 316 teeth were analyzed and dental panoramic radiographs were taken at the beginning of the study.

The patients investigated were male (29.9%) and female (70.1%). The youngest patient was 16 years and the oldest one was 53 years old.

The mesioangular impaction was found as 50.6%, vertical impaction 29.5%, horizontal impaction 10.4%. The age group 16-24 years was found the largest group for extraction (61.3%). The reasons for surgical removal of mandibular third impacted molars were orthodontic treatment (28,5%), infection (27,8%), pain Pericoronitis (20,8%). The postsurgical complication rate was 2,5%.

This study shows that: (a) female patients were more than males; (b). Mandibular third impacted molars were extracted for several reasons and Orthodontic treatment, Infection and Pericoronitis were the main causes for extraction in Aden, and (c) 50,6% of the angulation of the teeth was mesially impacted mandibular third molars.

Keywords: Mandibular third molar; Reasons; Angulation; Complications

The frequency of silent gallbladder stones in female patients : an ultrasonic study

Salem A. Ben Silm

Medical Department, Faculty of Medicine and Health sciences, Aden University.

E Mail: sbinsilm@hotmail.com

Abstract

This study investigated the frequency of silent gallstones among Yemeni female patients, and to determine the risk factors for the occurrence of silent gallstones among them. In this study, 202 female patients, with age ranging between 25-60 years, were examined ultrasonically to prove the presence or absence of gallstones. Some associated risk factors, such as age, BMI, parity, and diabetes mellitus were examined. Silent gallstones were found in proportion of 11.88% and more frequently among females over forty years old, obese and with diabetes mellitus. There was no significant relation between gallstones detection and parity in this study. In conclusion, old age, diabetes and obesity were found to be risk factors for developing gallstones among Yemeni females. Thus, a careful screening of obese, diabetic's female patients for the presence of gallstones and their elective surgical removal or medical dissolution should be recommended in order to prevent the need for crises intervention.

Key words: females, silent gallstones, risk factors.

SHORT COMMUNICATION

MEDICINE

An epidemiological view of the prevalence of amoebiasis and giardiasis among patients of Public Health Centers, Aden, 2006

Enayat Abdullah Hussain Hamza

**Department of Internal Medicine, Faculty of Medicine and Health Sciences;
University of Aden**

Abstract

In order to identify the prevalence of *En tamoeba hystolytica* and *Giardia lamblia* in Aden, the records of 2424 stool specimens of patients attending the three public health centers in the year 2006 were reviewed and analyzed. Of those 1211, (50%) were found to be positive to *E. histolytica* (36.3%), *G. lamblia* (17.3%) and (3.6%) double infections of *E. histolytica* and *G. lamblia*. The affected males with *E. histolytica* were 17.3% and the females were 15.5%. At the same time the positive results of *G. lamblia* in males were 7.1% and in females were 6.6%, with a male to female ratio of 1.1:1.

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Different values of *E. histolytica* and *G. lamblia*, other enteric pathogens and negative results between males and females were significant ($p < 0.05$).

The results revealed that infections with *E. histolytica* and *G. lamblia* were more frequent in patients aged 10-19 years (24.9%), followed by age group less than 10 years with 22.2% then patients of 20-29 years old with 21.1%

The difference of infected males and females according to age groups was highly significant ($P < 0.05$).

It can be concluded from this study that *E. histolytica* and *G. lamblia* infections in Aden are common among young population 20-29 years old as far as young children 10-19 and children below 10 years of old.

Key words: *Entamoeba histolytica*, *Gardia lamblia* , Prevalence, Health Care Center, Aden

ARABIC TITLES

AGRICULTURAL SCIENCES

Effect of nitrogen fertilization on growth, yield and yield components of two varieties of maize (*Zea mays* L.) under Delta Tuban conditions, Lahg Governorate

Nasser . A . Saeed , .A. S. EL-Debaby and Asmat . O. Abdulla

*Nasser A . Saeed , A. S. EL-Debaby** and *** Asmat O. Abdulla

* Dept. of Agron., Nasser's Fac. of Agric. Sciences, Aden Univ. Yemen

** Dept. of Agron., Fac. of Agric. Moshtohor , Banha Univ. Egypt

*** Dept. of Biology , Fac. of Education ,Radfan , Aden Univ. Yemen

Abstract

Two field experiments were carried out at the Farm of Nasser's Faculty of Agricultural Sciences, Lahj Gov., during the consecutive seasons 2005/2006 and 2006/2007 , to study the influence of four levels of nitrogen (0, 90 , 110 and 130 k g / N/ ha) on growth , yield and yield components of two maize crop varieties (*Zea mays* L.) Keniga-36 and Taiz -3. Treatments were arranged in split plot design with three replications.

The most important results could be summarized as the following:

1- In growth characters, Keniga-36 surpassed significantly Taiz -3 in plant height, ear height and number of leaves /Plant, whereas Taiz -3 surpassed Keniga-36 in stem diameter, also in characters of crop yield and its components,

Keniga -36 variety was surpassed significantly Taiz-3 variety in ear length, ear weight, Shelling percent, ear diameter and grain yield /ha, whereas Taiz-3 surpassed Keniga-36 in weight of 1000 grains at both seasons.

2- Nitrogen fertilization significantly influenced plant height, ear height, stem diameter and number of leaves /plant of maize crop. The highest values of these characters were growing by the rate 130 kg /N/ha, followed by application 110 kg/N/ha without differences among them in the growing seasons.

3. Ear length was the only yield component which was affected by nitrogen fertilization, while the other yield components such as ear diameter, ear weight, 1000 grain weight, shelling percentage as well as grain yield/ ha were not significantly affected by increasing N level from zero+ 130 kg/ha in the both seasons. All these characters were superior in the rate 130 kg /N/ha, following the rate 110 kg /N/ha. Grain yield /ha was estimated at both seasons 5.407, 5.593 T/ha respectively.

4-Interactions between nitrogen fertilization and varieties were not significantly affected on all studied characters.

Key words : nitrogen fertilizer, varieties, growth , grain yield , maize ,

CHEMISTRY

The quantitative estimation of reduced Saccharides, proteins and metallic elements in date samples collected from Hadramout Governorate

**Yaqoob Abdulla Kassim and Khlood Abdulla Ahmed Hussein
Chemistry Department – College of Education – Aden , Aden - University**

Abstract

Hadramout governorate is famous of Palms trees Agriculture and has been particularly chosen for its distinction of the land type and climate varieties. In addition, Hadramout is distinguished of the distributive situation of the palm trees fields, and the various kinds of dates according to their different shapes, colors and names people call them.

The study aims at estimating the amount of saccharides, proteins and some metallic element, of some different kinds (soft, semi soft, hard) of the dates of Hadramout.

All samples were submitted to the following chemical analyses:

- 1-The quantitative estimation of the reducing saccharides in the titration method by Fehling's solution.
- 2- Estimating the percentage of the protein (N X 6.25%) by using Kjeldahl Proteins Digester
- 3-Determining the concentration of some metallic element by using Atomic Absorption Spectrometer (AAS) vario(6) system from the ash analyses.

The results derived from this study of the different samples of the dates of Hadramout were as following:

1- The percentage of the Reducing Saccharides (soft weight)

The percentages of the reducing saccharides among the soft samples were between (27.85-60.16%) while the semi soft samples were between (51.50-72.65%) whereas the hard samples were (76.07-88.20%) and these formed the highest percentage of the reducing saccharide.

Generally, the average value of the reducing saccharide of the samples of study was (63.80%).

2- The percentage of protein (soft weight):

The protein percentage of the soft samples was between (1.40-2.97%) while the semi soft samples were (1.62-2.02%), whereas the hard ones were between (1.89-2.84%) this indicates to the low percentage of protein in all the samples.

3- The concentration of some metallic element (mg/100g) was as follow:

Sodium Na (7.20 - 28.97), potassium K (419.64-1020.47), calcium Ca (22.20 - 94.35), manganese Mn (0.144 – 0.526), iron Fe (0.689 – 1.866), copper Cu (0.149- 0.793).

As a results, this study points out that most of the kinds of the dates of Hadramout has a good natural characteristics which contain a very approximate proportion of saccharide, that the dates of the Saudi Arabia kingdom, Libya and Sudan

Even some good kinds of those dates maybe of a better quality especially the commercial ones such as: Almigraf, Algazaz, and others kinds.

Key words : kinds of dates , reducing saccharides, proteins, Hadramout , Yemen S.

ENVIRONMENT

Treatment of environmental pollution problem resulting from whey by cultivation of *Kluveromyces fragilis* as a source of producing single cell protein

Rihab Rasheed Taha * and Ali Sheehab Ahmed**

*Faculty of Science- Dept of Biology – Sana'a University
rihab_azawii@yahoo.com, **IBN- Rushid Company-Iraq.

Abstract

Six yeast isolates were isolated from stored and discarded whey of several dairy product factories . Two isolates designated as Y0 , Y1, were characterized as *Kluveromyces fragilis*, and the other two isolates (Y2 , Y3) belonged to the genus *Kluveromyces* . A comparative study was done with standard isolate *K. fragilis* ATCC 28244. It was noticed that the Y0 isolate is very efficient to grow in artificial growth medium containing 5% lactose , compared with local and standard isolates. The growth ability of some selected isolates in crude whey or

Whey supplemented with some nitrogenous and phosphorus compound was studied separately in order to transform whey into useful proteinous compound and to get rid from its harmful environmental effects. The Y0 isolate was selected to produce single cell protein from whey because of its great ability to utilize whey better than all other local and standard isolates. Growth enhancing factors, such as ammonium sulfate 0.2% and potassium phosphate 0.1%, were selected also as the best growth enhancing factors to produce a biomass enriched with proteinous compound. Hence the environmental problems resulting from discarded whey can be minimized .

Key words: Whey, Yeast , kluveromyces fragilis, single cell protein

PHYSICS

Measuring crash time by using a very simple electric circuit

Shehab Abdulwadood Ali and Ahmed Kadum Falih

Department of Physics, College of Education-Saber, University of Aden

Abstract

To measure very short periods, a normal watch can not be useful to use, and, from other hand, a computer technique not available in our laboratories. For example when two bodies crash, there is always a while, where the two bodies will be in contact before their separation. This a short while could remain for parts of million or thousand of a second, of which is difficult to measure. Here in this paper a very simple and low-priced device was designed to be able to do this measurement using the idea of a capacitor's charge and discharge.

Keywords: crash time, capacitor, capacitor's charge