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ENGLISH TITLES

CHEMISTRY

Synthesis of some new polycycles via Diels-Alder reaction and their chemical conversions

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Abstract

The polycycles 2-(piperidinyl methanamide)-5-(3',4'-methylenedioxy-phenyl)-8-aryl -7,9-dioxo-8-aza bicyclo[4.3.0]non-3-ene 5a-f were synthesized via Diels-Alder cycloaddition reaction of piperine 1 with N-arylmaleimides 4a-f, or with maleic anhydride 2, followed by reaction of the product 3 with amino benzene derivatives (ArNH₂). Some of the synthesized compounds were directed towards hydrolysis, reduction and dehydrogenation reactions to give the corresponding 6a-c, 7a, b, d and 8a, c, e derivatives, respectively. The structure of the new synthesized compounds was established by elemental analysis and spectral data studies.

Keywords: Diels-Aldre Reaction, N-Arylmaleimides and N-Arylphthaleimides

Anodic stripping voltammetry by using carbon paste electrode for the determination of some trace heavy metals and application of treated wastewater and natural water

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Abstract

In the present work, the carbon paste electrode was used for the anodic stripping voltammetry in flow- injection system procedure and has been developed for simultaneous determination of Zn, Cu, Pb, and Cd. The quantitative determination for these elements is possible at low concentration of Fe when using supporting electrolyte mixture of 0.1 molL⁻¹ Na₂P₂O₇ and 0.2 molL⁻¹ acetate buffer at pH 4. The proposed method was evaluated and applied for wastewater and natural water samples. The working ranges are 40-350 µgL⁻¹

for Cu, 50-250 $\mu\text{g L}^{-1}$ for Cd, and Pb, and 80-400 $\mu\text{g L}^{-1}$ for Zn, with detection limits of 15.5, 21.21, 34.54, and 58.14 $\mu\text{g L}^{-1}$ for Cu, Cd, Pb and Zn, respectively. RSD% range was (4.21% -1.26%) and recovery range was (98.19% -100.7%). The Fe content was negligible in these samples.

Keywords: Anodic stripping voltammetry; Carbon paste electrode; Flow-injection system; Heavy metals

ENGINEERING

Hybrid parallelism of artificial neural network

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Abstract

Nowadays, artificial neural network (ANN) is considered one of the important task for solving recognition problems, such as pattern, image and speech. This paper has designed hybrid parallelism implementation for ANN which is based on two parallel standards; the first is multithreading standard (OpenMP) for shared memory architecture at each workstation, and the second is message passing interface (MPI) for distributed memory architecture of platforms connected to the network. We have developed an implementation of the algorithms focused on the study of hybrid parallelism. The analytical and experimental results of the performance and effectiveness of the hybrid parallelism of ANN are presented.

Key words: Recognition, neural network, MPI, OpenMP, hybrid parallelism, parallel partitioning, parallelism profiling, parallel programming, multicomputer.

MEDICINE

Conversion rate of laparoscopic cholecystectomy to open procedure

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Abstract

The objective of this study is to audit the conversion rate and to identify the reasons necessitating laparoscopists in our department so as to convert laparoscopic cholecystectomy to open procedure.

The data of patients who were scheduled for laparoscopic cholecystectomy (n =709) between 2002 and 2006 were retrospectively analyzed in relation to conversion rate and reasons for conversion. The study included 648 women and 61 men with the mean age of 38 years. (range 14 to 86 years). Cholecystectomies that were not primarily scheduled to laparoscopic cholecystectomy from the beginning were excluded. Laparoscopic cholecystectomy was successfully performed in 650 patients with completion rate of 91.7%. Conversion to open cholecystectomy was performed in 59 patients with a conversion rate of 8.3%. Various reasons have been identified. Extensive adhesions were the most common reason for conversion (n=20, 33.9%).

In conclusion, our descriptive study has shown that laparoscopists in our department still have conversion rate as high as that being reported in early years of laparoscopic cholecystectomy. The most common reason for the conversion to an open procedure was dense and extensive adhesions. The absence of strict guidelines and lack of an extensive experience in laparoscopic surgery increased the rate of conversion

Keywords: Cholecystolithiasis , Laparoscopic cholecystectomy , conversion rate.

Patterns of abdominal wall hernias in Yemeni patients in Aden

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Abstract

Hernia is a very common medical condition affected all ages and both sexes. This is a prospective descriptive hospital-based study conducted to study the pattern of anterior abdominal wall hernia among adult patients operated at the Surgical Department of Al-Gamhouria Teaching Hospital, during the period from Jan. 1st through Dec. 31st, 2007.

The frequency of operated hernia in adults was 5.21 %. Males were affected more than females (71.2% and 28.8%, respectively), with a ratio of 2.5: 1. The age ranges from 15 to 74 years, with a mean of 50.3 ± 4.4 years and the frequency of hernias increases with age. Commonly, patients presented with reducible hernias (74.6%), and the common types of operated hernias were indirect inguinal hernia (49.2%), direct inguinal hernia (22.9%), and incision hernia (14.4%). Males had indirect (61.9%) and direct (28.5%) inguinal hernias, while females had incisional (35.3%), femoral (14.7%), and umbilical hernias (11.8%). Inguinal and femoral hernias were seen more in the right side (85.9%). Postoperative complications were seen in 11.0%, and the case fatality rate was (0.85%).

The incidence of hernias is more frequent among elderly patients, and there is significant relationship between the type of hernia and sex. Laparoscopy & outpatient clinics should be available.

Key words: Hernia, Reducible , Inguinal , Femoral, Aden, Yemen

Distribution of Hepatitis B virus, and Hepatitis C virus among blood donors in Aden Blood Center.

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Abstract

Although blood transfusion saves millions of lives worldwide each year, infections caused by hepatitis B virus and hepatitis C virus remain the most important health problems. The introduction of new and improved screening tests for transfusion-transmissible diseases has led to remarkable improvement in the safety of the blood supply, with substantial shortening of the window period for HCV and HBV infections. This prospective study was conducted at Aden Blood Center from June 2007 to December 2008. A total of 5825 blood donors were evaluated for the prevalence of HBV, HCV, of 5572 (95.7%) were replacement donors, and 253 (4.3%) were voluntary donors. HBsAg positive was

found in 2.7%, anti-HCV in 2.0%, of overall donors. Nevertheless, because there is no screening method to reduce the risk resulting from transfusion to zero, it is essential to adopt strict criteria in the selection of donor and to avoid unnecessary transfusion. The purpose of this study is to determine the prevalence of hepatitis B, and hepatitis C infections among the blood donors.

Key words: Blood donors, HBV, HCV, Distribution.

Emergency obstetric hysterectomy in Al-Wahda Teaching Hospital – Aden- (2004-2007)

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Abstract

The aim of this paper is to study the emergency obstetric hysterectomy by determining the incidence, maternal characteristics, indications, maternal and perinatal outcome.

A retrospective descriptive hospital based study was conducted at Al-Wahda Teaching Hospital, during the period January 1st 2004 to December 31st 2007, including all women underwent emergency obstetric hysterectomy.

During the study period, 39 cases underwent emergency obstetric hysterectomy with incidence of 1.85/1000 deliveries and 14.09/1000 cesarean deliveries. EOH was more common in age group 26-35 years (59%), as well as in Pluripara (48.7%) and grandmutlipara (38.5%). The main indication was ruptured uterus (38.4%), followed by sepsis (30.8%), uterine atony (12.8%), and placenta accrete (10.3%). The leading risk factor was primary cesarean section (30.8%), followed by obstructed labor (25.6%), and previous cesarean delivery (23.1%). The Perinatal mortality was (51.3%), and case fatality rate was (17.9%).

We conclude that increased the incidence of emergency obstetric hysterectomy, associated with high maternal and perinatal mortality, uterine rupture and sepsis are the common indications, while primary cesarean section, obstructed labor, and previous cesarean sections are the leading risk factors.

Keywords: Emergency obstetric hysterectomy, ruptured uterus, sepsis.

Non-viral chronic active liver disease in Yemeni patients and the possible implication of Qat chewing

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Abstract

Twenty eight Yemeni patients with nonviral chronic active liver disease were retrospectively studied for underlying causes and possible predisposing risk factors. They were 17 males and 11 females with age range between 17 and 42 years (median 29.5 years). The diagnosis was based on their clinical, biochemical and imaging criteria, and was consistent with severe chronic liver disease that was persistent for more than six months. Seroimmunological markers for autoimmune liver disease were found in 8 patients (4 males and 4 females). Slit-lamp examination for Kaiser-Fleicher ring, which is characteristic for Wilson's disease, was negative in all patients and serum iron and serum ferritin were normal in two patients over 40 years . Habitual qat chewing was found in 27 patients, of which 20 were daily qat chewers. Meanwhile, good response to immune suppressive treatment was documented in 22 patients. These results indicate that most Yemeni patients with nonviral chronic active liver disease are young, heavy qat chewers and have good response to immune suppressive treatment. These findings may suggest an underlying immunologic pathogenic mechanism for the chronic active liver disease in these patients. Further studies are needed to investigate the nonviral causes of chronic liver disease and the possible implication of qat chewing habit in liver diseases as well as in other diseases in Yemeni population.

Key words: chronic liver disease, nonviral chronic active liver disease, qat chewing habit, pesticides, immunologic mechanism and immunosuppressive treatment.

**Frequency of urolithiasis in patients from Southern Governorates
in Yemen: Ultrasonographic findings**

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Abstract

Urolithiasis is the third most common pathological disease affecting the urinary tracts. Although epidemiological studies about this condition are lacking in our country, the work and expertise of physicians indicate that the occurrence of urolithiasis is extremely high.

We performed a prospective study of the frequency of urolithiasis in a sample of 480 patients, including males and females of all ages, who underwent ultrasound examinations in our private clinic in Aden.

136 patients (28.3%) were affected with urolithiasis. The rate was higher in males (71.3%) than in females (28.7%), with a male to female ratio of 2.5:1.

The frequency of urolithiasis was high on average (67.6%) among patients in the age groups 21-50 years old, declined among patients over 51 years of age, and was markedly low among patients more than 70 years of age.

Fourteen (10.3%) cases of urolithiasis were found in patients at the age group \leq 20 years.

72.8% of urolithiasis were located in the kidney, 11.8% in the ureter, and 2.2% in the urinary bladder.

The concomitant kidney/ureter was in 11% and kidney/ prostate stones in 0.7% of the cases. The most multiple stones (11 %) was presented in males.

The conclusion of the study provides a quantitative estimate of the frequency of urolithiasis among southern Yemeni patients, and more detailed epidemiological studies are needed to enlighten the etiological factors of stone formation and its geographical variations and to determine the incidence and prevalence of this health problem.

Keywords: urolithiasis, frequency, ultrasound, Aden

The prevalence of macrovascular complications and risk factors among diabetic patients in Al-Gamhouria Teaching Hospital, Aden

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Abstract

Diabetes mellitus(DM) is a major public health problem in Yemen. The aim of this descriptive study is to determine the prevalence and risk factors of macrovascular complications among diabetic patients attending the medical ward at Al-Gamhouria Teaching Hospital during the period January 2005 to June 2006. Patients completed an interviewer-administered questionnaire, carried out by treating physicians, and underwent a complete medical assessment including measurement of height, weight, blood pressure and examination for evidence of macrovascular complications. A standard echocardiography was recorded and blood samples were taken to document fasting blood sugar, glycosylated hemoglobin (HbA1C) and lipid profile. 198 of diabetic patients were studied, 108 (54.4%) of them were males and 90 (45.4%) were females, with a mean age of 57.63 years (SD ± 12.86). 65.6% of DM patients had evidence of macrovascular complications, 39.9% of patients had cardiovascular disease, 26.3% had cerebrovascular disease and 5.5% had peripheral vascular disease. About 57.7% of the study patients had hypertension. The study findings revealed that macrovascular complications in diabetic patients were more common among males, increased with age, with hypertension, and its prevalence increased steadily with duration of diabetes mellitus. Our data demonstrated that there is a significant association between hypertension and the presence of macrovascular complications among diabetic patients. However, a lack of correlation between macrovascular disease and glycemic control among diabetic patients was observed.

Keywords: diabetes mellitus, macrovascular complication, cardiovascular disease, cerebrovascular disease, peripheral vascular disease.

PHARMACY

Assessment of different commercial brands of Tamoxifen 10 mg tablets marketed in Yemen as anti-breast cancer

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Abstract

Breast cancer is one of the most common cancers in women; one, out of nine women will have breast cancer in her life time.

Tamoxifen is the trans-isomer of a triphenylethylene derivative. The chemical name is 2-[4-(1,2-diphenyl-1-butenyl)-phenoxy]-N,N-dimethylethanamine.

Tamoxifen is the first anti-estrogen to be used successfully for the treatment of all stages of breast cancer. Several laboratory principles, described 20 years ago, have been tested in clinical trials and became the standard treatment approach for women with breast cancer.

The aim of this study is to evaluate the quality and quantity of the commercial brands of tamoxifen 10 mg tablets which are marketed in Yemen. We have selected five items of tamoxifen 10 mg, Tamocit® (Ram-Pharma) Novofen®, (Remedca), Nolvadex® (Astrazenca), Tamoxifen® (Amriya) and Zymplox® (Gene-Pharma) of five different commercial brands, which are registered in the Supreme Board of Drugs and Medical Appliance of Yemen.

We have applied the qualitative and quantitative analysis for evaluating these items and comparing them with Reference Standard of tamoxifen citrate. The limit of content of assay of tamoxifen tablet is (90-110%) (B.P.) and the dissolution content not less than 75 % (Q) of the labeled amount of tamoxifen tablets is dissolved in 30 minutes (USP).

The results of analysis of these five items of tamoxifen tablet 10 mg were evaluated. They showed that the qualitative and quantitative analysis were complied with B.P. and USP requirements and there was no significant difference between the results of assays of commercial companies ($p < 0.05$).

Keywords: Different brands of Tamoxifen tablets 10 mg, Qualitative and Quantitative Analysis, Spectrophotometer, Breast cancer.

Teratogenic effects of Rabeprazole and Ranitidine on chick embryos

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Abstract

Rabeprazole and Ranitidine are two types of drugs which reduce the amount of acids produced in the stomach. They are used for the treatment of gastrointestinal (duodenal and gastric ulcers) disease and gastro esophageal reflux disease . In the current study, the teratogenic effect of rabeprazole and ranitidine on the development of chick embryos and the histological changes of liver and stomach compartments were studied, using three doses of different values as follows (0.33,0.66 and 1.32mg/kg) for rabeprazole and (5, 10 and 20mg/kg) for ranitidine. The results showed that the rabeprazole and ranitidine induced embryonic malformations with significant decreases in weight, length, forelimb length, hind limb length, and beak length of embryos. The histological changes of the liver and stomach of chick embryos include deformation of the liver structures, activation of phagocytic process, especially in cells death area, hepatic dystrophy and necrosis. In the stomach, a demonstrated defect was observed in the development of its mucous membrane, which appears as cells atrophia of the mucous membrane, inter- and intracellular edema, destruction cells and formation of micronodular necrosis in its area and in the underlying tissue.

Key words: Rabeprazole , Ranitidine , teratogenic effects, chick embryos

PHYSICS

Thermal degradation process of Poly Ethylene Terephthalate used for food and water packaging

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Abstract

Thermogravimetric analysis (TGA) was carried out for the thermal degradation of commercial poly(Ethylene Terephthalate) (PET) samples. The thermal treating curves were carried out using (TGA) with advanced thermobalance design. (TGA) is operating from ambient temperature to 900K, with two different heating rates; 10 0C/min and 20 0 C/min, with a flow rate of

nitrogen atmosphere of 20ml/min. the results show that activation energy values are around 190kJ/mol, at a heating rate of 10 0 C/min and around 222kJ/mol at a heating rate of 20 0 C/min. No notable difference is noticed in the activation energy of thermal degradation of (PET) samples even after extending the exposure time from 1 to 48 weeks. These results indicate that the (PET) samples have a good thermal stability.

Keywords: Thermal degradation , PET, Packaging, Thermal Analysis, Activation Energy.

The thickness dependence of the electronic and optical properties of a-SiGe:H films grown by P - CVD technique

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Abstract

This paper reports the dependence of the electronic and optical properties of hydrogenated amorphous silicon germanium (a-SiGe:H) films grown by plasma chemical vapor deposition (P-CVD) technique on film thickness. The effects of varying the thickness from ~ 0.1 to ~ 0.6 μm on dark conductivity (σ_d), photoconductivity (σ_{ph}), optical energy gap (E_{opt}) and Urbach tail width (E_u) of the band tails of localized states in the band gap of the a-SiGe:H film material were investigated. The observations show an increase in σ_d , σ_{ph} and E_{opt} and a decrease in E_u , with an increase of the film thickness. The electronic and optical properties of the a-SiGe:H films were correlating with their structural properties. The electronic and optical quality of a-SiGe:H films were ascribed to the decrease in the width of the band tail of localized states at the conduction band edge and reduction of the structural disorder in the film network.

Keywords: a-SiGe:H films, dark conductivity (σ_d), photoconductivity (σ_{ph}), optical energy gap (E_{opt}), Urbach width (E_u).

Zone refining method for growing CdI₂ crystals and studying their polytypism by x-ray diffraction

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Abstract

Purification involves repeated passage of a narrow molten zone through the boat of the material to be purified. Impurities which are more soluble in the melt than in the solid are carried along the direction of the movement of the molten zone. Impurities which are less soluble in the melt than the host solid tend to solidify first as it progresses, and thus move in a direction opposite to that of the molten movement in steps whose maximum length is equal to that of the molten zone. The boat containing powdered cadmium iodide was placed in the central portion of the growth chamber. The argon gas was made to flow slowly through the system to prevent oxidation of the material during heating. This flow was begun after half an hour before the actual operation of the zone refining to ensure that an inert atmosphere is provided inside the growth chamber before heating.

The voltage was regulated through the variac so that the temperature inside the growth was lightly higher than the melting point of CdI₂ (3880C). It is required to maintain 65v potential. The movement of heating trolley was started 10 minutes after switching on the heater. At the end of each zone pass, the heater was quickly returned to their initial position by manual operation so that the process of zone refining could be started all over again. A structure of CdI₂ and typical impurity distribution along the length of the one refined rod is shown in figs (1), (2), (3) and(4). A satisfactory good single crystal could be grown in about 8 to10 zone passes. In the present experiment, 8 passes were made. After the passes are over, the crystal is allowed to cool down slowly. Since the single crystals of CdI₂ are known to be very soft, the ingot had to be handled very carefully. Since CdI₂ crystals have a platy nature, the faces were suspected to be ab-planes. As shown in fig (5). The intermediate section of the crystal was chosen for the study of the crystal by x-ray diffraction since it is purest part. For the sake of convenience in mounting and adjustment of the x-ray diffraction camera, the crystals with thickness ranging between 0.6 and 0.8 mm were cleaved from the ingot and were finally cut into pieces of length ranging between 5 & 8 mm.

Keywords: Quartz glass tube, boat, heat zone, Cadmium Iodide powder, argon gas, x-ray diffraction.

SHORT COMMUNICATION

MEDICINE

The role of immunohistochemistry in the diagnosis of mixed cellularity classical Hodgkin lymphoma

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Abstract

Immunohistochemistry has become a routine technique in the diagnosis of lymphoma in general, and Hodgkin lymphoma in particular, as well as in the differential diagnosis among different lymphoma subtypes and other malignant tumors.

Different immunomarkers have been applied to a lymph node sections .All were negative, except for CD30 which was positive in the malignant H/ RS cells , where as other markers were positive only in the reactive cells.

Nodular lymphocyte predominant Hodgkin lymphoma was excluded by negative CD20, LCA, EMA and anaplastic large cell lymphoma by negative EMA.

Key words: Mixed Cellularity Classical Hodgkin Lymphoma, WHO classification, immuno histochemistry

Arabic Titles

ENVIRONMENT

Distribution of Acacia spp. along the road from Yarim to Aden, Republic of Yemen

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Abstract

The authors carried out many field trips to different parts of Yemen, including the study area which extend for 225 Kilometers from Yarim- Aden. The study area exhibits the altitudes from 1800 m.a.s.l to 30 m.a.s.l. In this work we locate 9 different Acacia spp. distributed along the study area; most of them are very important for the human and environment.

Keywords: Acacia spp., Yarim, Aden.

Natural vegetation at middle and high altitudes region in Lawder and Mukairas, Abyan Governorate, Republic of Yemen

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Abstract

This study aims at identifying the nature of natural vegetation at the middle and high altitudes regions in the area under study .The field study has shown the vegetation affluence of this region, of which 116 plant species, belonging to 86 genera and distributed among 45 families, have been collected .It has also illustrated the prevalence of the communities of herbs, shrubs and dwarf bushes. Moreover, the study has demonstrated that there is a plant variation between Lawder and Mukayras due to the increase in their altitudes. It is worth mentioning that some plant species, such as Anisotes trisulcus, have been extinct(disappeared) in the areas with an altitude of 1500 ms.

The region under study is characterized by unique different ecological factors and circumstances: weather and geotopography such as cliffs, slopes and the prevailing rock structures, in addition to the weakness of soil profile with scarce and intermittent rainfall.

Besides, it has been noticed that there are some succulents that have been prevailed such as Adenium obesum, Euuphorbia spp. and Caralluma spp.

Key words: Vegetation , herbs, shrubs and dwarf bushes, succulents Sp.

FOOD SCIENCES

Evaluation of quality characteristics for three types of local produced Yoghurt(Zabady)

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Abstract

To evaluate quality of three types of Yoghurt (A,B,C), chemical, organoleptic microbiological tests were conducted, after 24 hours, a week and 2 weeks of the production and during storage at $50C \pm 20C$. The results showed that the quality characteristics of the three types of Yoghurt were confirmed to the Yemeni standards (No: 66 for Yoghurt) in the total titrable acidity, total solids, fat, solids not fat,flavour, taste texture and total coliform bacteria, during the period of storage .

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The (C) type was significantly better ($P < 0.05$) in flavour than the other two types (A,B) after 24 hours from the production and storage at $50C \pm 20C$.

The (C) type was mathematically better in most of the quality characteristics under investigation.

Keywords: Yoghurt, quality, acidity, total solids, fat, solids not fat, flavour, taste, texture, coliforms bacteria .