

Abstracts of Research papers volume 18 Number 3 (December 2014)

TABLE OF CONTENTS

ENGLISH TITLES

AGRICULTURE SCIENCES

Biochemical genetic markers analysis of some Yemeni sorghum cultivars under iron deficiency stress using proteins and isozymes electrophoresis

A. I. A Tayeb and J.H.M. Al-Shabi

ENGINEERING

SLOC the base unit to derive metrics and essential input for cost estimation models

Maisa Diab, Muhamad Al-Naif Al-Hajj Younis and Muhammad Rabee Shaheen

An adaptive transmission range protocol based on probabilistic broadcasting for Ad Hoc Networks

Abdulmalek S. Alqobaty and Abdul-Gabbar T. Al-Tamimi

ENVIRONMENT

Studies on the flora of highland and mountains of Yemen: flora of Al-Ahjor, Al-Mahweet Governorate, Yemen

Hassan M. Ibrahim, Mohamed A. Hussein and Abdul Nasser A. Al-Gifri

Comparative study of acute toxicity of crude oil, dispersant and crude oil with the dispersant around “Jazirat ALAommal” in Aden –Yemen by using bivalves (*Pitar rudis*) as bio indicator

Aziz, S. Dobian, Nada A. Hassan, Elham Al-Shaibani and Nabil A. Al-Shwafi

MATHEMATICS

Some linear relations for Exton's quadruple hyper geometric functions K_{16} and K_{18}

Ahmed Ali Atash and Ala'a Mohammed Obad

Double integral expressions containing Laguerre-Konhauser polynomials and Bessel functions

Fadhle B.F. Mohsen and Maged G. Bin- Saad

On local properties for topological semigroups

Abdulkafi A. Al-Rafaei , Amin Saif and Suliman Dawood

On the fixed point theorem in n -Banach spaces

Antar Ali Al-syaad and Basel Mohammed Hardan

MEDICINE

Sickle cell anemia in Yemeni patients- Aden city: clinical severity and its index

Gamal H Zain and Awad Ahmed Bamaheraz

Operative finding to determine sensitivity and specificity of ultrasound in diagnosis of pediatric intussusception at Al-Gamhuria Teaching Hospital

Mohamed Hasson Salem, Al-Ass Abdulmajed Alawi and Awadh Hudeel

Impact of α -tocopherol on glycemic status of uncontrolled Yemeni Type 2 diabetes: Placebo controlled trial

Ahmed Naser Al-saeedi and Samira Abdulla Mahmood

SHORT COMMUNICATION

CHEMISTRY

Determination of Cadmium, Copper, Iron, Lead and Zinc metals in fresh lubricating oils by flame atomic absorption spectroscopy

Mohamed S. Al-Nozili, Ahmed N. Al-Hakim and Nabil A. Al-Hemiary

ARABIC TITLES

AGRICULTURAL SCIENCES

Testing the efficiency of selected traps for catching wasps (*Vespa orientalis* L.) in Kabath /Abyan

Bilail M. S. Kammander , Waleed M.N. Mohammed and Salem M.Fadhel

ANIMAL PRODUCTION

Effect of black cumin (*Nigella Sativa* L.) supplementation at different levels on the growth performance, some selected blood serum constituents, and carcass traits of broiler chickens

Abdullbari Abdurab, Ghassan Mansour Aqil, Mohammed Alzawqari,
Hani Al-Baadani and Ibrahim Almelamah

ENGINEERING

Scheduling dependent tasks with one predecessor on homogenous multiprocessors using bees algorithm

Bassim Oumran and Muhammad Rastanawi

ENVIRONMENT

Descriptive study with the identification key of the species of snakes in Aden Governorate, Republic of Yemen

Salem Busais

Ethenobotanic uses of some plants by women for adornment and beauty in the coastal areas of Hadhramout

Salim M.BinSalman, Ahmad S. Bamosa, Mohammed A. Hussein
and Fatihia A. Bashantof

MEDICINE

Using Erbium(Er):YAG laser in surgical extraction of impacted lower third molars

Obaida Hamamah and Mohamed Sabe-Alarab

A comparative study between acrylic specimens repaired by visible light-cured resin and auto-polymerizing resin in terms of fracture resistance

Hala alshakaki, Majed Bisiau and Khalid Abbish

A histomorphometric evaluation of bioactive glass and platelet rich plasma in sinus floor elevation

Abtesam Askandar, Hassan Alkhrass and Ayman Sabbagh

VETERINARY

Evaluation of different laparotomy techniques for neutering female dogs

Zaher yaser Alshamy, Mustafa Alhllak
and Azzam Alomari

ENGLISH TITLES

AGRICULTURE SCIENCES

Biochemical genetic markers analysis of some Yemeni sorghum cultivars under iron deficiency stress using proteins and isozymes electrophoresis

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Abstract

In this study, a biochemical genetic markers, such as proteins and isozymes markers, were used in the assessment of three sorghum cultivars to find out their response to Fe-deficiency stress. Six Yemeni sorghum cultivars were grown in sand culture and supplied with three levels of Fe⁺⁺⁺ (0, 4 and 8 mg/l) to assess. The Fe treated cultivars were screened for their tolerance to Fe-deficiency, stress with respect to yield-related traits performance, such as chlorophyll percentage. Both of Fe-tolerant and sensitive cultivars, were recorded according to their yield related trait. Electrophoresis of the total soluble proteins and the five isozymes (alpha-Esterase, Peroxidase, Polyphenol Oxidase, Amylase and Superoxide Dismutase) for highly tolerant and sensitive sorghum cultivars linked to iron deficiency were analyzed using Sodium DodocyleSulphate Poly Acrilamide Gel Electrophoresis (SDS-PAGE) and Native Poly Acrilamide Gel Electrophoresis (N-PAGE) techniques respectively,.The results of the total soluble proteins and five isozymes electrophoresis revealed newly synthesis bands either under control or iron deficiency stress, referred to enhancement or repression of gene expression in these plants on transcriptional levels, which could be used as marker assisted selection to evaluate the responses of sorghum cultivars to iron deficiency stress in breeding programs. In general, the biochemical exchange during plant growth are efficient tools for evaluating sorghum cultivars under abiotic stress.

Keywords: Sorghum, Fe-deficiency, Biochemical genetic markers, SDS-PAGE and Native-PAGE, Isozymes.

ENGINEERING

SLOC the base unit to derive metrics and essential input for cost estimation models

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Abstract

Source lines of code (SLOC or LOC) is a software testing metric used to measure the size of a software program by counting the number of lines in the text of the program's source code[11].

There are some drawbacks in SLOC metrics that affect the quality of software because of SLOC metric output is used as an input in other Software Estimation methods, Like COCOMO, SLIM, SEER-SEM, and Price-S.

SLOC is typically used to predict the amount of effort that will be required to develop a program, but, can we take advantage of it in the prediction of the extent of the difficulty or ease of the program for examination and diagnosis before it is released or completed?

Keywords: Testing software, Estimating software, Source Code Metric (SLOC), COCOMO, Correlation.

An adaptive transmission range protocol based on probabilistic broadcasting for Ad Hoc Networks

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Abstract

Nodes in an ad hoc environment face two major challenges: the mobility and the resource constraints. This makes the traditional layered approach that separates routing, flow control, scheduling; and power control is suboptimal in wireless ad hoc networks. Using a cross-layer design enables control over two or more layers yield significantly performance improvement. An Adaptive Transmission Range Protocol (ATRP) Based on Probabilistic Broadcasting uses cross layer between the physical and network layer and is proposed to adapt to the state of the network. In ATRP, each node maintains a table for its neighbors and selects its own route request forwarding nodes based on the state of the portion of the network surrounding it. The forwarding nodes have been selected according to the number of neighbors and the node transmission range.

Node can adjust its forwarding neighbors after changing its own transmission range by using probabilistic forwarding when it locates in very dense. The ATRP has been implemented, evaluated and compared with well known protocols AODV, using GloMoSim simulator. Many performance analyses, including study of impacts of node density and node mobility, have been performed. Results have revealed that the performance behavior of the ATRP routing protocols has significantly been improved.

Keywords: Cross layer design, mobile ad hoc networks, probabilistic broadcasting, adaptive transmission range.

ENVIRONMENT

Studies on the flora of highland and mountains of Yemen: flora of Al-Ahjour, Al-Mahweet Governorate, Yemen

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Abstract

Field trips were conducted during the period 2004- 2005 and 2013 for data and sample collection. About 192 plant species were collected and investigated from the flora of Al-Ahjour County. The result revealed that the plant species collected are belonging to 63 families; 5 families of Pteridophyta, represented by 7 species, 6 genera and remaining 58 families are belonging to Angiosperms. Dicotyledons are represented by 164 species, 127 genera & 48 families and Monocotyledons are reported by 21 species, 17 genera & 10 families. The endemism rate is 5.3% (10 species) for Arabian Peninsula and 1.1% (2 species) for Yemen.

The dominant 10 families, according to the number of species, collected from the study area are: Asteraceae (24 species), Lamiaceae (15 species), Solanaceae (10 species), Euphorbiaceae (9 species), Acanthaceae, Boraginaceae, Fabaceae and Poaceae (6 species each). The flora of Al-Ahjour consists of 6.7% species, 35.2% families and 14% genera of the total number so far recorded from the entire flora of Yemen.

Keywords: Al-Ahjour, Flora, Highland and High Mountains.

Comparative study of acute toxicity of crude oil, dispersant and crude oil with the dispersant around “JaziratALAommal” in Aden –Yemen by using bivalves (*Pitarrudis*) as bio indicator

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Abstract

The toxic effects of crude oil, dispersant, and mixtures of these were examined on the behavior and mortality of bivalve *Pitarrudis* as bioindicator. As a result of toxicity previously mentioned pollutants to *Pitarrudis* for 96 hours exposure, the *Pitarrudis* showed various behavioral changes according to different concentrations of pollutants. The behavioral changes of *Pitarrudis* were an extension of siphons, opening of the valves, mucus secretion, while the *Pitarrudis* in control were normally behaved. The mortality of the *Pitarrudis*, as a result of exposure, were increased according to different concentrations of pollutants. The results of our study showed that the dispersant alone be less toxic than crude oil or a mixture of oil with dispersant. The LC_{50} of dispersant for bivalves *Pitarrudis* was 6.9 ml / l , and of crude oil was 6.4 ml / l , and of oil with dispersant was 5.6 ml / l . At acute toxicity test, there was no death in the control group.

Keywords: Acute Toxicity, Crude oil, Dispersant, Bivalves, mortality, behavior.

MATHEMATICS

Some linear relations for Exton’s quadruple hyper geometric functions

K_{16} and K_{18}

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Abstract

The aim of this paper is to derive some linear relations for Exton's quadruple hypergeometric functions K_{16} and K_{18} . These relations are derived with the help of Laplace integrals representations of these functions.

Keywords: Linear relations, quadruple hypergeometric functions, triple hypergeometric functions, Laplace integral.

Double integral expressions containing Laguerre-Konhauser polynomials and Bessel functions

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Abstract

The aim of this work is to derive general integral formulas involving Laguerre- Konhauser and Bessel polynomials which appear to be new. The approach begins with an expression for the product of two Laguerre-Konhauser polynomials and two Bessel functions to integrate and perform a re-summation to obtain other functions, and then to reduce these to more familiar forms.

2010 Mathematics Subject Classification. Primary 33C45, Secondary 44A15.

Keywords: Laguerre polynomials, Konhauser polynomials ,Bessel functions, Integral formulas.

On local properties for topological semigroups

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Abstract

For a topological semigroup S , a semigroup (S) has been constructed as a set of causal homotopy equivalence classes of causal paths in a semigroup S . In this work, by using the locality of right inverse and simply (path) connected for S , we will construct the left topological semigroup (S, e) via e -paths and show, under certain conditions, that the direct product $(S_1 \times S_2), (e_1, e_2)$ is isomorphic to $(S_1, e_1) \times (S_2, e_2)$.

Keywords: Topological semigroups; Path homotopy; locally path connected.

AMS Classification: 22A15, 60G17, 54D05.

On the fixed point theorem in n -Banach spaces

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Abstract

In the present paper, we established some theorems concerning the common fixed point theorem on n -Banach spaces which mainly generalizes the results of Gangopadhyay *et al.* [2].

Keywords: n -Banach spaces, unique fixed point, common fixed point.

MEDICINE

Sickle cell anemia in Yemeni patients- Aden city: clinical severity and its index

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Abstract

Sickle cell anemia (SCA) is an inherited blood disease characterized by chronic hemolytic anemia and intermittent episodes of vascular occlusion, with acute and chronic pain. To determine the clinical variability and its degrees in the patients and to correlate the severity of the disease with socio- demographic and hematological factors of the patients.

This study was a prospective study conducted at Alwahda Teaching Hospital in Aden and including all symptomatic children with SCA, admitted during the study period (July-December 2006). Data on present the history, family history, past medical history and frequency of acute clinical events, during the previous year were collected. The "severity index" that is equal to the sum of the different scores realized from parameters, during the previous year, has been used to assess the severity.

The total number of the studied patients with sickle cell anemia was 77 patients; 45 (58.4%) were males. The severity parameters of patients showed that, during the previous year, 66.2% of them had 3 or more admissions to the hospital, 44.2% had 3 or more vaso-occlusive crisis, 35.1% had 3 or more blood transfusion, and 11.7% of them had 3 or more episodes of infection, or acute

chest syndrome. The estimated severity index ranged from 2 to 12, with a mean of 6.71 ± 2.65 , and more than half of the patients (68.8%) were having a severity index of ≤ 6 .

The clinical course and severity of the disease are of a severe form, similar in many aspects to those with SCA in Western Saudi Arabia and Central Africa. Education and genetic counseling must be offered free for all patients and their families in order to decrease the disease incidence and, in turn, disease severity.

Keywords: Yemeni patient, clinical severity, sickle cell anemia

Operative finding to determine sensitivity and specificity of ultrasound in diagnosis of pediatric intussusception at Al-Gamhuria Teaching Hospital

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Abstract

Intussusception, the invagination of a part of the intestine into itself, is the most common abdominal emergency in early childhood.

The aim of this study is to evaluate the role of abdominal sonography in diagnosis of intussusception in pediatric group by determining the accuracy and specificity of ultrasound for diagnosis and exclusion of intussusception, using operative and ultrasound findings and outcomes.

This study was carried out in Al-Gamhuria General Hospital from during the period 2007-2013. The patients were followed up after surgery to determine the number of true positive, true negative, false positive and false negative ultrasound findings. The overall sensitivity and specificity of ultrasound were 79.4% and 50% respectively and the positive and negative predictive values were 96.4% and 12.5% respectively. US should be the first imaging modality in pediatric patients who are clinically suspected to have intussusception and the sonographic study could be undertaken by a more experienced sonographer before doing surgery.

Keywords: Intussusception, Pediatric Intussusception, Ultrasonography.

Impact of α -tocopherol on glycemic status of uncontrolled Yemeni Type 2 diabetes: Placebo controlled trial

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Abstract

In this study, we hypothesized that α -tocopherol supplementation, along with antidiabetic agents, improve glycemic status in Yemeni patients, with uncontrolled type 2 diabetes. Double blinded, placebo controlled clinical trial was carried out at Aden Diabetic Center in the period from January to May 2014. 32 uncontrolled type 2 diabetic patients with neuropathy, were randomized in a double-blind, placebo-controlled trial. Participants were randomized to a daily dose of 400 IU α -tocopherol or placebo for 3 months. Blood samples were drawn for investigation of fasting blood glucose (FBS), glycated hemoglobin (HbA_{1c}), α -tocopherol and antioxidants levels at baseline and after 3 months. Anthropometric measurements were done. Within α -tocopherol group, HbA_{1c} levels decreased from 9.12 ± 1.39 to 8.96 ± 1.01 (1.76% reduction) and FBG from 235.60 ± 68.66 to 220.80 ± 61.39 (6.29% reduction) at the end of the study period. This decline was insignificant as compared with placebo group. No significant change in anthropometric measurements of the patients in both groups has been observed. α -Tocopherol group displayed a rise in plasma levels of α -tocopherol ($p=0.007$) and total antioxidants ($p=0.011$) after 3 months, while placebo group did not show significant change. In conclusion, α -tocopherol did not significantly reduce HbA_{1c} level. Therefore, in contrast to our initial hypothesis, supplementation with α -tocopherol did not improve glycemic control in Yemeni patients with uncontrolled type 2 diabetes.

Keywords: α -Tocopherol, Glycated hemoglobin, Total antioxidants, Type 2 diabetes.

SHORT COMMUNICATION

CHEMISTRY

Determination of Cadmium, Copper, Iron, Lead and Zinc metals in fresh lubricating oils by flame atomic absorption spectroscopy

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Abstract

The atomic spectrometric technique was applied for determination of heavy metals (Cd, Cu, Fe, Pb, Zn) in five sample types of lubricating oils which are widely used in Yemenforpetrolengines. The problems related to difficulties of sample preparation are addressed as well as the proposed steps to overcome them. Three different methods were used for the sample preparation. These are dissolving in solvents, digestion using acids, and dry ashing. The dry ashing method was used for the lubricating oil samples preparation due to its simplicity and low coast. The obtained results showed that the investigated heavy metals are present in varying values in all lubricating oil samples. The highest percentage by weight (128.731µg/g) of the estimated heavy metals was found in the Mobil Super Formula HD40 oil, whereas the lowest (82.263 µg/g) was found in Shell oil.

Keywords: Flame atomic absorption spectroscopy, Heavy metals, Lubricating oil.

ARABIC TITLES

AGRICULTURAL SCIENCES

Testing the efficiency of selected traps for catching wasps (*Vespa orientalis* L.) in Kabath /Abyan

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Abstract

The study was conducted in Kabath/ Abyan Gov., in a site containing 40hives, during 2012 and 2013 years, where wasp (*Vespa orientalis*) is spreading widely. The aim of this study is to use traps with tuna as bait attractant to trap the insect, and to study the influence of four types of traps named Kod1, Kod2, Wired and tin traps, on density of wasp insects. The results showed that Kod2 was significantly the best in attracting wasp, compared to the other traps, with an average of 20.63 and 27.87 insects and a significant increased percentage in number of trapped insects estimated to 68.27, 98.57, 22.16% and 99.64, 124.22, 132.4% in the periods from 16 Oct. to 17 Nov. and from 24 Nov. to 25 Dec., compared to Kod1, wired and tin traps respectively. The results also showed mostly the same percentage in 2013, where Kod2 trap was significantly the best in attracting wasp insects with an average of 32.23 and 22.13 insects and a significant increased percentage estimated to 114.44, 99.9, 195.42% and 57.85, 103.21, 70.49% in the

periods from 20 Oct. to 25 Nov. and from 30 Nov. to 31 Dec., compared to Kod1, wired and tin traps, respectively.

Keywords: *Vespa orientalis*, attractant traps, density number. Tuna.

ANIMAL PRODUCTION

Effect of black cumin (*Nigella Sativa* L.) supplementation at different levels on the growth performance, some selected blood serum constituents, and carcass traits of broiler chickens

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Abstract

The present study aims at investigating the effect of black cumin (BC) supplementation at different levels on growth performance, selected blood serum constituents and carcass traits of broiler chickens. A total of 240 broiler chicken (Ross 308) were involved in the present study experiments. Four days after growing period as an adaptation period, 26 day-old birds were distributed randomly to the four treatments with 2 replicates (30 birds each) based on completely randomized design. The treatments in this experiment were as follows: the T1 as control treatment and T2, T3, T4 treatments were supplemented with 1%, 2% and 3% of the BC, respectively. The average of body weight, daily weight gain, feed conversion ratio, feed consumption, feed conversion efficiency, some blood serum constituents dressing percentage and economic evaluation were measured. The present findings indicated significant effect of BC concentration on the average of body weight, daily weight gain and feed conversion efficiency for T4 (3% of BC), compared to other treatments. Although there was an improvement in feed conversion ratio at T3 and T4 compared to T2 and T1 treatments, no significant differences were observed for the feed intake among treatments. The total protein of blood serum and globulin concentrations were significantly ($P<0.05$) high for T2, T3 and T4, compared to the control treatment. However, the blood serum calcium was significantly ($P<0.05$) decreased in T2, T3 and T4 compared to the control treatment. The highest dressing percentage was marked for T4 (71.1%) and the lowest was for T1 (68.5%). It was concluded that 3% supplementation of BC to broilers diet could be useful in improving the physiological performance of broiler chickens.

Keywords: Broiler, Black cumin, Performance, Blood serum Constituents, Carcass Traits.

ENGINEERING

Scheduling dependent tasks with one predecessor on homogenous multiprocessors using bees algorithm

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Abstract

Scheduling tasks on the multi-processors is considered the most important studied issues to make the processors operate without idleness times. Thus reducing the overall time of completion the disposal of processors latency gives highest productivity on the processors.

The static scheduling issues for the dependent tasks with one predecessor on homogenous multiprocessors system had been studied. A bee's algorithm had been used in order to build an algorithm for tasks scheduling problem solving the scheduling problem using the suggested algorithm and comparing it with the previous algorithm for the same purpose and with the optimal solution for scheduling problem.

The aim of the suggested algorithm is to find an acceptable solution with better time, using bee's algorithm and to study the effect of increasing the number of tasks for several scheduling problems in fixed number of processors in order to demonstrate the stability of suggested algorithm and the effects of dependent static tasks of the algorithm.

A study of suggested algorithm has proved its ability to get a value close to the optimum value of the objective function in tests of scheduling problem that have large and medium size of tasks in case there were dependencies for tasks. Getting away from the optimal value is due to dependencies between tasks. The suggested algorithm improved the result of traditional BCO algorithm. In a previous research, the suggested algorithm gave an optimal result in the scheduling independent tasks.

Keywords: scheduling problem; dependent tasks; independent tasks; multiprocessors; BCO.

ENVIRONMENT

Descriptive study with the identification key of the species of snakes in Aden Governorate, Republic of Yemen

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Abstract

The present study aims at describing the snake species in Aden Governorate, Republic of Yemen, and preparing identification keys to the families with their species to establish a database for future studies. The list of snake species was updated and discussed. Species of *B. fuliginosus*, *P. schokari* and *R. moilensis* were moved from the family Colubridae to the new family 'Lamprophiidae' according to recent studies. The results revealed the occurrence of 18 species of snakes in Aden Governorate, of which ten are poisonous and seven may lead to death. These are: all members of the families Elapidae and Viperidae, in addition to one species of the family Lamprophiidae (*Atractaspis*).

Keywords: Snakes, Description, Identification key, Aden, Yemen

Ethenobotanic uses of some plants by women for adornment and beauty in the coastal areas of Hadhramout

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Abstract

The study discussed the popular uses of plants in adornment and beauty by women in the coast of Hadramout. The study was carried out in five regions (Almukalla, Ghailbawazir, Alsheher, Eastern Dees and Qusier). These regions are considered famous in the coast of Hadhramout areas. Focusing on 15 plant species in these areas, some implanted and some are land the widespread use of these plants in adornment and beauty by women has been observed in those areas the ancient times up to present.

The results of the analysis show varying uses of these plants, such as hair care, face, skin, dental, perfumes; depending on the components of plant.

Keywords: plant species, hair care, face care, popular use.

MEDICINE

Using Erbium(Er): YAG laser in surgical extraction of impacted lower third molars

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Abstract

The aim of this study is to compare between the outcomes of the surgical extraction of impacted lower third molars using Er:YAG laser and surgical burs. The study consisted of 40 impacted lower third molars exist in 20 patients (11 male + 9 females) who had two symmetric impacted lower third molars. The samples were categorized into two groups: Er:YAG laser group and surgical burs group. The right molar was extracted first using Er:YAG laser and, after three weeks, the left molar was extracted in the same patient using surgical burs. Edema and trismus were measured after one day, three days and seven days. The data were analysed using (SPSS Statistics® v19) program. There was no significant difference in edema and trismus during all the three observation periods. Based on the results of this study, the use of Er:YAG laser may be considered as an alternative and effective method to surgical burs in surgical extraction of impacted lower third molars.

Keywords: Er:YAG laser, bone removal, impacted third molars, surgical burs.

A comparative study between acrylic specimens repaired by visible light-cured resin and auto-polymerizing resin in terms of fracture resistance

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Abstract

Fracture of an acrylic resin denture is a common and unresolved problem in prosthodontics, resulting inconvenience to both patient and dentist. The aim of this study is to compare between fracture resistance of acrylic specimens repaired by Traid VLC resin and auto-polymerizing resin with two different distances between the acrylic specimens. Three groups of heat -polymerized acrylic resin were used in this study, The first control group consisted of 10

samples 60x10x3mm, the second auto-polymerizing resin group consisted of 20 samples 30x10x3mm, The third Traid VLC resin group consisted of 20 samples 30x10x3mm one of its ends bevel 45 degree; these acrylic specimens were made from metal specimens. After repairing, samples were kept in sterile water for a week before testing (three point test).

The mean fracture resistance of auto-polymerizing resin group for distance (1-2)mm between repair surface was respectively (55.0380-53.8470)MPa, but in Traid VLC resin group for distance (1-2)mm between repair surface was respectively (23.0490- 19.681) MPa. By the results of this study, the auto-polymerizing resin showed fracture resistance higher than that of Traid VLC resin, in addition to the lack of significant differences between the fracture resistance at the distances (1-2mm).

Keywords: fracture resistance, Traid VLC resin, auto-polymerizing resin, repair.

A histomorphometric evaluation of bioactive glass and platelet rich plasma in sinus floor elevation

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Abstract

The purpose of this study was histological evaluation of the efficacy of adding Platelet Rich Plasma (PRP) to Bioactive Glass (BG) in maxillary sinus elevation. A total of 12 sinus floor elevation procedures has been carried out on 8 patients with residual bone height less than 6 mm. Grafts were used as a bone substitute in the first group BG group (6 cases), mixed with (PRP) and used in the second group PRP+BG group (6 cases). Histological biopsies were taken after 6 months during implant installation. Histomorphometric measures: vital bone, connective tissue and residual graft materials showed no statistically significant differences between BG group (47.33%-42.00%-10.67%) and BG+PRP group (55.20%-33.20%-11.60%).

Keywords: sinus floor elevation, bioactive glass, Platelet Rich Plasma.

VETERINARY

Evaluation of different laparotomy techniques for neutering female dogs

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Abstract

(12) Female dogs were used in this research and were placed into two groups: Group (1) consists of (6) female dogs ovariectomized through paralineaAlbaincision and group (2) consists of (6) dogs undergone to ovariohysterectomy through line a Alba incision. All surgeries were performed on Dorsal recumbency position and undergone to general anesthesia, the ovary easily exteriorized by hook, the suspensory ligament was ruptured to expose enough ovarian pedicle through the surgical incision and that showed laparotomy through paralinea Alba was easier and less complications.

Keywords: Neutering, Female, Dogs, Ovariohysterectomy, ovariectomy.