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**ENGLISH TITLES**

**AGRICULTURE SCIENCES**

**The effect of different levels of nitrogen fertilizer on the growth and yield of coffee trees (*Coffea arabica* L.)**

**Abdo A. Alnomir<sup>\*1</sup>, Abdo M. Alhadi<sup>1</sup>, Khalid A. Alhakimi<sup>1</sup> and Ali M. Hadi<sup>1</sup>**

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**Abstract**

A study was carried out at the experimental farm of the Agriculture Faculty, Ibb University, Yemen, during (2011-2013). This study aims at investigating the effect of different doses of nitrogen fertilizer on the growth and yield of coffee trees. The treatments were applied using humus 2kg/tree as control (T1), nitrogen fertilizer as urea with different doses 6g/tree (T2), 13g/tree (T3), and 19.6 g/tree (T4). Tri-superphosphate (5g), potassium sulfate (5g) and humus (2kg) /tree were added to all treatments except of the control. A randomized complete block design was used. The study period was two years, the morphological characters and coffee productivity were studied. As shown in the results in the 1<sup>st</sup> year, the height's gain of trees were increased in T4 and T2. Concerning the gain of branches number, they were increased in all treatments, with no significant differences among treatments. In the 2<sup>nd</sup> year, the gain of height was highly increased in T4 (72.38) followed by T3 and T2 (65.45 and 61.55 cm, respectively) compared with T1 (54.95). A high significant difference (p 0.05) on the gain of height between T4 and T1 was observed. The gain of branches number was significantly (p 0.05) increased in T4 (25.8 ) as compared to T1, T3 and T2 (20.9, 19.9 and 19.6). The coffee yield was the highest in T3 (703.3 g/tree) followed by T4 (676.4 g/tree).

**Key words:** Yemen, *Coffea arabica* L., Nitrogen Fertilizers, Growth, Yield.

# The effect of growing media and stem cutting type on rooting and growth of *Bougainvillea spectabilis* plants

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## Abstract

The bougainvillea plants (*Bougainvillea spp*) are appraised as decorative plants because of their lovely blossoms that bloom several times throughout the year. It is believed to have originated from South America, but widely cultivated in the tropical and sub-tropical areas of the world. Propagation of these plants can be done by using vegetative methods such as stem cuttings, grafting or tissue culture. The present investigation was carried out with the objective of standardizing a rapid and simple protocol for propagation and sprouting *Bougainvillea spectabilis* plants under fiberglass house conditions. Different types of stem cuttings, viz. terminal, middle and basal cuttings (15-20 cm long), were treated with IBA (Indole butyric acid) at 2000 ppm and cultured in various types of growing media viz. soil, soil +sand (1:1), soil +sand +peat moss (1:1:1), and soil +sand +peatmoss +FYM (1:1:1:1). The results indicated that basal stem cutting realized significantly the highest values of rooting percentage (> 97%) at all growing media used, compared with the terminal and middle cuttings (< 20%) after 60 days of planting. Similarly, the basal stem cutting yielded the greatest values in terms of root length (cm) and number of roots per cutting, with no significant difference among different media and cuttings. The basal cuttings significantly recorded the highest values for all parameters studied irrespective of the type of growing media used. Significantly, the height of rooted cuttings, after 90 days of planting was the greatest (67.66 cm) in the medium containing soil+ sand (1:1), compared to the other media investigated. The number of shoots and leaves per plant at the different media were statistically on a par. The research determined that hard- wood cutting and soil medium is the best cutting and medium for rooting of *bougainvillea spectabilis* plants.

**Key words:** Bougainvillea, propagation, fiberglass house conditions, growing media, type of stem cutting.

# ANIMAL PRODUCTION

## The influence of physical form of organic acid and antibiotics on the performance of broiler chickens under bacterial induced challenge

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### Abstract

The present study was conducted to evaluate the influence of physical form of organic acid and antibiotics on the performance of broiler chickens challenged with *Salmonella typhimurium* (*S. typhimurium*). Two hundred forty 1-d-old male broilers (Cobb 500) were equally distributed into 6 treatment groups with 10 blocks and 24 chicks each. The treatments were: group 1 (positive control, basal diet without any addition, non-medicated and unchallenged), group 2 (negative control, basal diet, non-medicated and challenged), group 3 (basal diet with 0.05 g antibiotic flavomycin /kg diet) and groups 4 and 5 (basal diet with 1 g of commercial mixture powder and coated of organic acids fumaric) and citric acids/kg diet), respectively. Group 6 is a blend coated of organic acids (fumaric and citric) and their ammonium salts 2.5 g/kg diet. At 16 days of age, using oral dose, birds were challenged with *S. typhimurium* ( $2 \times 10^8$  CFU/ml). Average body weight of group 3 and 5 was significantly increased ( $P < 0.05$ ) at 21, 28 and 35 days of age and daily weight gain in the overall period was compared to other treatment groups. The highest value of daily feed intake was observed in dietary supplementation compared to the negative control (group 2), but group 2 had lower significant effect ( $P < 0.05$ ) compared to the positive control (group 1) during the 15-21 days of age. However, supplementing diets with experimental groups had no significant effect ( $P < 0.05$ ) on daily feed conversion ratio, during all periods. The results revealed that the supplementation of antibiotics and organic acids as coated capsules into the broiler diets might improve the performance in challenged broiler chicks with *S. typhimurium*.

**Key words:** Broiler, *Salmonella typhimurium*, Organic Acids, Antibiotics, Performance.

## **ENGINEERING**

### **The protective-decorative coatings on concrete products, obtained by the method of plasma treatment**

**\*\*Nadejda Ivanovna Bondarenko, \*Thabet Salim Al-azab, \*\*Vasilii Stepanovich Bessmertnyi, \*\*Irina Aleksandrovna Ilyina and \*\*Yahya Mohammed Yahya Mohammed**

**\*\*Belgorod State Technological University named after V. G. Shoukhov, Russia, 308012, Belgorod, Kostyukov str., 46.**

**\*Republic of Yemen, Aden University**

#### **Abstract**

The article deals with the peculiarities of producing the protective-decorative coatings on concrete products by means of fusing the face surface with plasma torch. The concrete products with protective-decorative coatings, obtained by means of plasma spraying, have the high aesthetic, performance and application properties. There was designed an efficient formula of the intermediate layer, preventing dehydration of the concrete face surface during the plasma fusing. The intermediate layer includes chamotte with the strictly defined grain size composition and white portland cement. There were researched such basic functional characteristics of protective-decorative coatings, as density of the coating, frost-resistance, porosity, micro hardness, acid-resistance and alkali-resistance.

**Key words:** concrete products, protective-decorative coatings, glazing, bond strength, plasma treatment.

## **ENVIRONMENT**

### **Environmental contaminants and their impact on some of ground water quality, in Taiz, Yemen: Study Case**

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#### **Abstract**

The main aim of this study is to evaluate the quality of ground water supplies of Taiz city. The results shows that the most parameters analyzed in the study samples, such as conductivity, TDS, hardness, chloride, fluoride etc., were higher than the permissible limit according to WHO and YSMO. The runoff water which carried

sewage and other wastes are the main anthropogenic source of water contamination and with interface with natural contamination by the rocks formation in the studied areas. The exacerbates of the problems are the lack of proper treatment of the city sewage, the lack of good drainage system around the wells, and also there are no proper paving surroundings of the city wells.

**Key words:** Water samples, sewage samples, physical measurement, chemical analysis, biological tests.

## **MEDICINE**

### **The prevalence of pre-diabetes and diabetes among secondary school students in Aden city 2013**

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#### **Abstract**

Diabetes mellitus is one of the leading chronic diseases of childhood and adolescent. While it is said that type 2 diabetes occurs mostly in individuals over 30 years old and the incidence increases with age, it seems an alarming number of patients with type 2 diabetes who are barely in their teen years. In fact, for the first time in the history of humans, type 2 diabetes is now more common than type 1 in childhood.

The main objective of this study is to identify the prevalence of prediabetes and diabetes among secondary school students in Aden city during the period Nov. 20<sup>th</sup> 2012 - Feb 1<sup>st</sup>, 2013.

This was a secondary School based cross sectional study, performed in Aden, includes 200 who were students randomly selected.

Prediabetes was highly prevalence among adolescent 35.5%, 1% diabetic and 22.5% obese.

28.9% of the study population who had obesity are prediabetic while diabetic cases it was 2.2%, with 70.7% of the students prediabetic and 3.1% of student with diabetes have positive family history of diabetes.

These results shows high risk of diabetes and prediabetes among secondary school students which may expose them to early complications in adult life so early measures must be taken to improve this situation.

**Key words:** diabetes, pre diabetes, prevalence, secondary school, Aden.

# **Study of gastric outlet obstruction in Al-gamhuria Teaching Hospital-Aden (January 2004-December 2013)**

**Mohamed Hasson Salem**

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## **Abstract**

Gastric outlet obstruction implies a complete or incomplete obstruction of the distal stomach, pylorus or proximal duodenum. This retrospective study was carried out in Al-gamhuria Modern General Hospital, Aden, between January 2004 and December 2013, to highlight the etiological spectrum, diagnostic tools, management and outcome. Males are more often affected, with a male to female ratio 4.1:1. The mean age was  $42.38 \pm 13.71$ , years while in children the mean age was  $2.11 \pm 2.83$  months. The most common clinical presentation was non-bilious vomiting-56 (100%). The etiology was benign in majority [52 (92.9%)] and gastric cancer was the only malignant etiology [4 (7.1%)]. Hypertrophic pyloric stenosis [35 (62.5%)] was the commonest etiology in children, while peptic ulcer disease was 7 (12.5%) in adult. Abdominal ultrasound [42 (75%)] and upper gastrointestinal endoscopy [11 (19.6%)] was the common diagnostic procedures. The common surgical procedures performed were pyloromyotomy 35 (67.3%) , gastrojejunostomy and pyloroplasty each of them had the same frequency 6 (11.5%). The mortality rate was 3 (5.3%). In conclusion, gastric outlet obstruction is still remaining a surgical problem in our situation, since determining the underlying pathology needs early appropriate imagining studies and timely surgical intervention to avoid mortality.

**Key words:** Gastric outlet obstruction, Etiology, Management.

## **PHYSICS**

### **Investigation of the structural and electrical properties of Al-Ni the ferrite and effect of Yttrium**

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## **Abstract**

The aim of the present work is to prepare some samples of the S-type spinel ferrite  $Al_{0.51-0.51x}Ni_xFe_{2.16-0.16x}O_4$  and  $Al_{0.51-0.51x}Ni_xFe_{2.06-0.16x}Y_{0.1}O_4$  where ( $x = 0.0, 0.5, \text{ and } 1$ ) to investigate some of their structure and different electric properties as a function of temperature, frequency and compositions. The X-ray diffraction analysis of the samples ensures the formation of S-type spinel ferrite with the average particle size estimated as 35.1-35.9nm. Ac conductivity, dielectric constant and loss tangent

were investigated by using the complex impedance technique. The conductance results specified two types of conduction mechanisms, hopping conduction and displacement conduction of charge carriers quantum-mechanical-tunneling, QMT and correlated barrier hopping, CBH in the studied range of temperature. Cole-Cole diagrams show as expected the existence of a distribution of relaxation times and gave values of the activation energy of the dielectric relaxation process ranging from - 0.022eV to 0.173eV.

**Key words:** Al-Ni-Fe-Y Oxides; Nano crystal; Electrical conductivity; Dielectric properties.

## ARABIC TITLES

### AGRICULTURE SCIENCES

#### **The effect of water stress on the productivity of three maize (*Zea mays L.*) cultivars under Delta Abyan conditions**

**Mohsen Ali Ahmed and Abdullah El-Abd Ahmed Hail**

Nasser's Faculty of Agricultural Sciences- University of Aden

#### **Abstract**

A Field experiment was carried out at the Productivity Farm of El-Abd Ahmed Hayl-Abyan Governorate during 2011/2012 and 2012/2013 seasons in order to study the effect of water stress on the productivity of some varieties of maize. The experiment included nine treatments which were the combinations of Three treatments of water stress (normal irrigation, skipping one irrigation after first irrigation elongation stage and skipping one irrigation at milk ripe stage) and Three varieties of maize (Taiz 2, City of Lagos 7931, and Kneja 36).

A split-plot design in randomized complete blocks, with four replications, was used. The three local water stress were assigned at random in the main plots and three local cultivars of maize were assigned at random in the subplots, the area of each subplot was (3×4= 12m<sup>2</sup>). Data were statistically analyzed according with the used design, treatments means were compared using (L.S.D) test at 5% level.

The results could be summarized as follows:

The study showed a significant reduction in both of Grain yield and biological yield (metric tons / ha) with water stress in all of those qualities and the percentage shortage on the (skipping one irrigation after first irrigation elongation stage) treatment (26.12 and 26.45%) and (skipping one irrigation at milk ripe stage) treatment (9.39 and 20.14%) compared with (normal irrigation) in both seasons.

Kneja 36 cultivar significantly surpassed on Taiz 2 and the City of Lagos 7931, on grain yield per hectare in both seasons and biological yield in the second season.

Taiz 2 cultivar significantly surpassed Kneja 36 and the City of Lagos 7931 in 100-grain weight in both seasons.

Interaction between Deprive and cultivares significantly affect (normal irrigation) treatment with Kenja 36 cultivar giving highest values in each of the ear length, proportion of negligence and biological yield (metric tons / ha) in both seasons.

Taiz 2 cultivar with (normal irrigation) treatment which gave the highest values on 100-grain weight in both seasons.

**Key words:** water stress, cultivars, Growth, yield, maize.

## **The effect of nitrogen and phosphorus fertilization on some vegetative growth of three sunflower (*Heliathus annus L.*) cultivars**

**Abdulfattah Mohammad Nassr<sup>1</sup> and Ali Aidrous Assakkaf<sup>2</sup>**

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<sup>2</sup>Department of Agronomy and Agricultural plant, Nasser's Faculty of Agricultural sciences, University of Aden

### **Abstract**

A Field experiment was carried out at the experimental farm of Nasser's Faculty of Agricultural Sciences, University of Aden; during 2011 - 2012 and 2012 - 2013 growing seasons to study the effect of nitrogen and phosphorus fertilization on some vegetative growth of three sunflower (*Heliathus annus L.*) cultivars. The experiment included twenty one treatments which were the combination between three cultivars of sunflower: Demazen , Saha53 and Giza102 , and seven levels of fertilization: NOP0 , N30P30 , N30P60 , N60P30 , N60P60 , N90P30 and N90P60 kg / ha . Split- plot design in randomized complete blocks, with four replications, was used. The obtained results might be summarized as follows:

The study Saka53 cultivar, significain all growth characteristics increased both seasons gave the plant height (152.43, 152.91 cm), Stem diameter (1.62, 1.67 cm), Number of

leaves (25.88, 25.94 leave / plant) and Leaf area / plant (3160, 3116 cm<sup>2</sup>) in both seasons.

The results indicated that increasing the rate of nitrogen and phosphorus fertilization increased none significantly plant height (cm), Stem diameter (cm) and Number of leaves / plant in the both seasons.

The level fertilization (N90P30kg/ha) gave the highest mean significant differences found on Leaf area / plant (2760, 2750 cm<sup>2</sup>) in both seasons. A significant interaction was found between the cultivars and fertilization ( NP ) , the saka53 cultivar with ( N30P30 kg/ha ) gave the plant height ( 161.32cm) in the second season only, and the height Leaf area (cm<sup>2</sup>) with ( N90P30 kg/ ha ) ( 2720 and 2645 cm<sup>2</sup>) in both seasons.

**Key words:** Nitrogen, phosphorus, cultivars, vegetative growth, sunflower.

## **The effect of nitrogen, phosphorus, Iron and Zinc fertilization on vegetative growth of maize (*Zea mays* L.) under Delta Tuban conditions**

**Adel Ibrahim AL-Kendi<sup>1</sup> and Ali Khames Basbaa<sup>2</sup>**

<sup>1</sup> Chemistry Department, Faculty of Education, Saber, University of Aden

<sup>2</sup>Department of Agronomy & Agricultural plant, Nasser's Faculty of Agricultural sciences, University of Aden

### **Abstract**

A field experiment was carried out at the Experimental Farm of Nasser's Faculty of Agricultural Sciences, University of Aden, Governorate of Lahg, during 2011/2012 and 2012/2013 growing seasons, to study the effect of nitrogen, phosphorus, iron and zinc fertilization on the vegetative growth of maize (cultivar Knega 36). Split plot design in randomized complete blocks, with four replications was used, constituting 24 treatments, when the combinations of two levels of nitrogen and phosphate fertilizers (55+27.5 and 110 +55 kg NP/ ha) in soil Addition, and 12 levels of iron and zinc (0, 0.3 and 0.6 %Fe) equivalent to (0 .180 and 360 ppm) and (0, 0.03, 0.06 and 0.09 %Zn), equivalent to (0, 36.72 and 108 ppm) were applied spraying.

The results of the combined analysis of the two seasons indicated that high level of NP (110+55 kg NP/ha) surpassed significantly in both plant height, ear height, stem diameter, number of leaves and leaf area, which gave the highest value of these attributes (212.72 cm, 90.39 cm, 2.10 cm, 13.96 leaf/plant and 651.81 cm<sup>2</sup>) respectively . The same treatment also led to early silking date (65.36 days) as well as the maturity date (102.12 days), while no significant effect on tassling was found.

The spray treatment (Fe 0.3+Zn 0.09%) gave a higher significant increase in the growth traits mentioned previously estimated at 12.30, 11.94, 16.13, 23.68 and 24.56%, compared with control. Also the same treatment recorded significant early

tussling and silking date arrived at 2.87 and 3.32 days, respectively, compared with control.

The interaction between the different fertilizer elements had significant improve on plant growth attributes the treatment (110 +55 kg NP/ha + Fe 0.3+Zn 0.09%) gave a higher significant increase amounting to 11.51, 11.94, 18.32, 25.99 and 23.39%, compared with control (100% PN) attributes mentioned above, also led to early tussling, silking and maturity dates .

**Key words:** fertilization, nitrogen and phosphorus, iron and zinc, maize, Tuban delta.

## **A survey of weeds found in citrus and pepper fields of As-Sharaa village, Wadi Murran, Mudia District, Abyan Governorate, Yemen**

**Mohammed A. Hussein, Othman S. S. Al-Hawshabi, Abdul-Hakim Abdul-Ghani and Amani F. Qardash**

Biology Department, Faculty of Education, Aden University, Yemen

### **Abstract**

Weeds grows in the agricultural fields and its impact on different crops. Man did not wish the existence of weed in places that are exploited in agricultural production, it is found that farmers are suffering from the growing and distribution of those plants in agriculture fields. This study was carried in some fields of citrus and pepper in the district of Mudia in 2013, after the fall of large amounts of rain which helped the emergence of large numbers and variety of weeds that farmers does not like its presence in the fields farming, because of the resulting competition and losses for farmers.

The present study indicates that 50 species belonging to 43 genera and 21 families were growing in the fields of citrus and pepper. The dicots were 42 species, while the monocots were represented by 8 species. The most common families were Poaceae (7 species) representing 14% of the total species in the study area. The dominant genera were *Chenopodium* and *Corchorus* (three species each) representing percentage 6%.

**Key words:** Weeds, Fields, Species, Genus, Wadi murran, Abyan governorate.

## **BIOLOGY**

### **A comparative study of some isolated bacterial *Staphylococcus aureus* resistant to methicillin conducted in Aden Hospitals**

**Mohammed Fadhl Al-Maisary, Hassan Mohammed Al-Rahway and**

**Larisa Abdulla Awad Al-Shiekh**

Dept. of Biology – Faculty of Science and Education, University of Aden - Yemen

#### **Abstract**

The study was carried out for the isolated bacterial staphylococcus aureus resistant to Methicillin. Samples were taken from wounds of the infectious person by swab. After conducting bacterial implant as well as biochemical examinations, such as rennet enzyme, analyzed enzyme, which is heat-resistant, tolerate and menthol fermentation, the study revealed that 50 *staphylococcus aureus* were found, of which only 8 isolates were identified to be methicillin-resistant. These are isolates which would be the matter of the study for further steps.

An investigation was conducted on  $\beta$ -lactamase production after allergy examination was done for antibiotics amounting to 17 kinds.

$\beta$ -lactamase results showed that 6 isolates indicated positive results for this examination.

These isolates were expelled to electrical expulsion device in order to find out its content of plasmid bands.

The electrical expulsion results of plasmid showed that 5 isolates possess two plasmid bands, while the other two plasmid bands possess four plasmid bands. One isolate only contained one plasmid band.

**Key words:** Methicillin, *S.aureus*, wound, plasmid.

### **The value of isoelectric focusing and betalactamase enzymatic activity of *Proteus mirabilis* that causes urinary infection**

**Mohammed Fadhl Al-Maisary**

Dept. Biology – Faculty of Science and Education (Zingbar) – University of Aden-  
Yemen

#### **Abstract**

Samples were collected from patients infected with UTI, *Proteus mirabilis* were found and tested by *api20E* and antimicrobial susceptibility was done for isolates against 16 antimicrobial agents the results of detection of  $\beta$ -lactamase enzymes revealed that 19 bacterial isolates were gave positive results , while only 3 gave

positive results of detection of extended spectrum *-lactamase* (ESBLs) .The isoelectric focusing for isolates (UP<sub>1</sub>, UP<sub>2</sub>,and UP<sub>3</sub>) and enzymatic activity were determined, and the pH value was found as 5.6,7.4,and 5.4 respectively.

**Key words:** *Proteus mirabilis*, pH, Urinary Infection.

## **Vegetative composition study for Al-Hussin District, Al-Dhala Governorate- Yemen**

**Mohammed A. Ba-Abbad, Mohammed A. Hussein and Nada Al-Syed**

Department of Biology, Faculty of Education –Aden University

### **Abstract**

The investigation was carried out by field survey, during the period October 2013 – December 2014. The results of the vegetation survey were: 201 plant species, belonging to 135genera and following 53 families, were recorded. Out of these, there are 200 species of Angiosperms, of which 177 species of dicotyledonous and 23 species belong to monocotyledonous, while the pteridophyte is represented by one species.

The nature of growth of the recorded species found that the bushes (shrub) were prevalent in the study area where representing 60 species, followed by perennial grasses and annuals herbs representing 59 species each, while trees and under bushes were less visible in the study area which represent 10 species for the trees and 13 for under bushes. The results of this study recorded two species of parasitic plants.

**Key words:** Al-Husin distrect, dicots, monocots, vegetation

## **MEDICINE**

### **The effect of orthodontic treatment with fixed appliances on enamel**

**Ali Ammar and Hassan Farah**

Department of Orthodontics, Faculty of Dentistry, Hama University

### **Abstract**

This study aim at evaluating the effect of orthodontic treatment with fixed appliances on demineralization and White Spot Lesions (WSL) formation on enamel surface. Sample consisting of 30 patients undergoing orthodontic treatment with fixed

appliances, then demineralization and the number of WSL were observed at three time points:

T1: 6 weeks after appliance placement

T2: 6 months after appliance placement

T3: 12 months after appliance placement

To determine the Prevalence of White Spot Lesions, the study showed that the number of white spot lesions is getting bigger through time; men have more WSL than women, and no significant differences in prevalence of WSL between teeth

**Key words:** orthodontic treatment with fixed appliances, demineralization, white spot lesions (WSL).

## **Comparison between two lingual orthodontic brackets (STb – 7<sup>th</sup> G) in terms of speech performance and patients acceptance**

**Samiha Al-Haj Younes and Hassan Farah**

Department of Orthodontics, Faculty of Dentistry, Hama University

### **Abstract**

The aim of this study is to compare the influences of lingual appliances of different dimensions on sound performance, oral comfort and patients' acceptance before and after the insertion of two types of lingual brackets (STb – 7<sup>th</sup> G). Forty-six patients, with Class 2 division 1 malocclusion, were distributed randomly into two groups. 23 patients in group A (26 females +20 males) were treated with STb lingual brackets (Ormco, Glendora, CA, USA), whereas 23 patients in group B (14 female +9 males) were treated with 7<sup>th</sup> G lingual brackets (Ormco, Glendora, CA, USA). Speech performance was tested using spectrographic analysis of fricative /s/ sound and standardized questionnaires two weeks before extraction and application support device (T0) directly before the placement of lingual brackets (T1), within 24 hours thereafter (T2), 1 month after (T3), and 3 months after (T4) bracket placement. patients acceptance was assessed using standardized questionnaires. Data were analyzed by (Minitab® v15).

As a result, all lingual appliances investigated in this study led to significant impairments in sound performance and oral comfort, but with interappliance differences in the degree of impairment. The 7<sup>th</sup> G lingual bracket is more problematic than the STb one in terms of speech articulation. Although patients with both brackets suffered from different degrees of oral impairment, patients with 7<sup>th</sup> G brackets had more untoward effects, particularly during the first month of treatment.

**Key words:** Lingual brackets; Auditive analysis; Spectrography; Oral comfort; speech difficulty.

# **Laboratory study to compare microleakage of composite restorations on primary teeth prepared by using Er:YAG laser as a result of using two types of bonding materials**

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## **Abstract**

The aim of this study is to compare the degree of microleakage in primary teeth prepared by Er:YAG laser due to using two types of bonding materials (in vitro). This study consists of 40 newly extracted human primary teeth which its buccal surface is clear from caries. A standard class (v) cavity was prepared in buccal surface of all teeth by using Er:YAG laser. The sample was divided equally into two groups: conventional bond was used to restore first group, while self-etching bond was used in the second group. The sample was restored by using TETRIC N-CERAM composite. After finishing the restorations, all the teeth were immersed in 2% methylene blue solution for 24 hours. The microleakage degree was measured after making bucco-lingual section, then it was examined by stereomicroscope, and data was statistically studied by Mann-Whitney U test. As a conclusion, there was no significant difference between conventional and self-etching bond. As a result of this study it is clear that the self-etching bond can be used as an alternative way to conventional bond in pediatric dentistry.

**Key words:** Er:YAG laser, conventional bond, self-etching bond, microleakage.