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ENGLISH TITLES

CHEMISTRY

Synthesis and characterization of novel benzimidazole:

N-1-(2-benzyloxy-3-methoxybenzyl)-2-

(2-benzyloxy-3-methoxyphenyl)-1H-benzimidazole

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Abstract

The reaction of o-phenylenediamine 3 with benzyl o-vanillin 2 in dichloromethane at low temperature produced novel amino benzeneamine: 2-amino-N-(2-benzyloxy-3-methoxybenzylidene) aniline 5, which is isolated. In basic media, 2-(2-benzyloxy-3-methoxyphenyl)-1H-benzimidazole 9 and N-1-(2-benzyloxy-3-methoxybenzyl)-2-(2-benzyloxy-3-methoxyphenyl)-1H-benzimidazole 10 are formed from the intermediate 5. Both compounds 5 and 9 were obtained as single crystals and the structures were determined by X-ray crystallography, while benzimidazole 10 was obtained as a syrup. All compounds were confirmed by FTIR, HRMS, 1D and 2D NMR spectroscopy. The complete assignments of compound 10, using 1D and 2D NMR including 13C, COSY, HMQC and HMBC in acetone-d₆, will be discussed.

Key words: Synthesis; Benzimidazole; Amino benzeneamine; HRMS; 1D and 2D NMR.

ENGINEERING

Increasing the dynamic range of the transmission signal in optical channel

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Abstract

The possibility here after analysis the transmission signal using the coherent method of multiplexing to increase the dynamic range due to using the second modulation channel with the independent light source is considered. The value of the third order inter-modulation distortion is calculated. This research is devoted to the analysis of the

possibility of transmitting information, using the system known as (Coherent Multiplexing).

Grant such a way that are used in the foundation two channels instead of one channel an increase in the dynamic range of a signal transmission through the reduction of interference between channels modular, which occurs during the reception, and this is seen from the graphs (3) and (4).

There are some considerations must considered important in this study. These are:

- Independence of sources of optical transmission channels,
- Calculating a value for inclusion of internal noise level of the third (third order), and
- taking into account the time delay between the optical fields as a vector data if delays exceed time of the light source coherence.

Key words: optical channel, multiplexing, coherent, coupler, electro-optical.

GEOLOGY

Assessment of groundwater situation in Mawzaa area, Tihama Plain, Yemen, using satellite images

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Abstract

Mawzaa area is one of the most extensive groundwater irrigated area in Yemen. Overexploitation of groundwater by more than 260 wells, within small area of about 60 km², has caused a serious decline in groundwater levels. In the present study, an attempt is made to evaluate the groundwater situation in Mawzaa area, using satellite images interpretation techniques.

The Landsat Imaginary data are used for delineating the local geological, geomorphological, and land use characteristics for the groundwater point of view. The changes in cultivated area have been discriminated through the processing of four Landsat images acquired in 1972, 1985, 1995 and 2000. Field measurements and wells inventory data were used also to obtain water depths, groundwater abstraction, and water salinity distribution maps.

The results of this study revealed that the main exploited groundwater resource is the shallow alluvial aquifer of limited thickness (20 - 60 m), and occasionally recharged from the floods. During the last thirty years, an over exploitation of groundwater resources, which reached to about 12 Mm³ in 1985, and the decreasing in flood recharge have resulted in dramatic decrease in groundwater level. The average depth to water increased from 10 meter in 1985 to 30 meter in 2005. In the meantime, the overall groundwater irrigated area has increased from 172 ha in 1972 to 940 ha in 1985, while it shrank to about 564 ha in 1995 and 307 ha in 2000.

Key words: Wadi Mawzaa, Groundwater Assessment, Satellite Images, Tihama Plain, Yemen.

MATHEMATICS

A collocation method for a class of nonlinear singular integral equations with a Carleman Shift

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Abstract

The present paper is concerned with the applicability of the collocation method to a class of nonlinear singular integral equations with a Carleman shift preserving orientation on simple closed smooth Jordan curve in the generalized Holder space $H_\varphi(L)$.

Key words: Nonlinear singular integral equations, Carleman shift, Collocation method, Noether operator.

Suggested ridge regression estimators under multicollinearity

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Abstract

In this paper, the problem of estimating the regression parameters is considered in a multiple regression model $\bar{Y} = X\bar{\alpha} + \bar{u}$ when the multicollinearity is present. We propose five estimators to choose the ridge regression parameter k . A number of factors that may affect the properties of these methods have been varied. Through simulation, these new proposed estimators are proved to be better than the other ridge-type estimators evaluated elsewhere and the ordinary least square (OLS) estimator, using the mean square error (MSE) criterion in the multicollinearity case.

Key words: Multicollinearity, Ridge regression, Monte Carlo simulation.

MEDICINE

Complications of acute appendicitis: Algamhoria Teaching Hospital, 2008-2009

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Abstract

The aim of the study is to find out the frequency of complications of acute appendicitis. The study is a retrospective study conducted at Algamhoria Teaching Hospital in Aden. Medical records of patients who were admitted with complications of acute appendicitis, from January 2008 to December 2009, were reviewed and data were analyzed.

There were 94 (70.7%) males and 39 (29.3%) females, with a ratio of males to females 2.4:1. The mean age was 24.3 ± 14.2 years (age range, 1.5-80 years).

The most common complications of acute appendicitis was perforation (66.1%) distributed as local peritonitis gangrenous perforations 53 (39.8%) and diffuse peritonitis gangrenous perforation 35 (26.3%), followed by appendicular mass (22.6%) and appendicular abscess 15 (11.3%). The complications were recorded in patients aged 18-49 years (59.4%), followed by the age group 17 years old and less with 33.8%. The definitive diagnosis was delayed more than 48 hours in (77.4%) patients (delayed group) and shorter than 48 hours (early group) in (22.6%) patients ($P < 0.05$).

We concluded that local peritonitis gangrenous perforations and diffuse peritonitis gangrenous perforation were the main complications of acute appendicitis. Complications of appendicitis usually resulted due to delay in diagnosis and treatment.

Key words: Appendicitis, complications, frequency, Algamhoria Hospital, Aden.

Frequency of hydatidiform mole pregnancies: Aden, 2005-2008

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Abstract

The aims of this retrospective study are to estimate the incidence of HM generally and, in relation to age, to determine the type of hydatidiform mole.

A retrospective review of all recorded pathological results of biopsies of pregnant women at our private pathological laboratory in Aden, from January 2005 to December 2008, was undertaken.

Partial HM was found the most common than complete HM. The estimated incidence of HM was 0.7/1000 pregnancies. The mean age of affected pregnant women was 26.7 ± 8.5 years, pregnant women at early age (20-24 years) and late age (35 to > 44 years) of reproductive life were positively at high risk.

We concluded that further studies are needed to get the real incidence figures and to plan future programs to control these maternal disorders.

Key words: Frequency, Hydatidiform mole , Aden

Generalized epilepsy in children at Al-wahda Teaching Hospital: July - Dec 2006

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Abstract

Epilepsy is a problem of world-wide medical interest and has a major personal, familial and social impacts.

This prospective-observational study was performed on children (1 month-14 years) with generalized epilepsy, who attended at Al-Wahda Teaching Hospital during the period July-Dec 2006, aiming to highlight on the main clinical aspects of this important disorder.

A total of 68 children with generalized epilepsy were seen, most of them (60.3%) were males and the male : female ratio was 1.5:1.

The onset was significantly higher ($P=0.001$) under 5 years of age, being with a remarkable proportion (41.2%) under one year.

Seven types of generalized seizures were identified; the tonic-clonic seizure was predominant over all other types (47.1%), followed by the myoclonic seizure (16.2%).

Possible etiologic factors were recognized in 33.8% of patients of which birth asphyxia was the most common (47.8%) followed by CNS infection (26.1%).

Parental consanguinity was obtained in 38.1% as well as family history of epilepsy in 19.1% of patients.

EEG findings were abnormal in 75.0% and normal findings were prominent among patients with tonic-clonic seizures.

It can be concluded from this study that generalized epilepsy is a common disorder in children, being more common among males and those who have certain risk factors, particularly prior history of birth asphyxia or CNS infection, parental consanguinity and family history of epilepsy. Therefore, active preventive measures are required to reduce the incidence and early diagnosis along with proper management are essential to enhance good control and outcome of the disease.

Key words: Age at onset, tonic-clonic seizure, birth asphyxia and parental consanguinity.

Efficacy and safety of Extracorporeal Shock Wave Lithotripsy in pediatric urolithiasis

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Abstract

The objective of this study is to evaluate the efficacy and short term safety of extracorporeal shock wave lithotripsy(ESWL) in the treatment of pediatric urolithiasis

All children ≤ 17 years old who referred to Extracorporeal Shock Wave Lithotripsy Unit in the period from June 2004 to September 2006 were followed. All patients were evaluated pre ESWL by plain film(KUB),intravenous pyelogram (IVP), or ultrasonogram (U/S) (in case of radiolucent stones or impaired renal function). We measured the largest diameter of the stone(s) as an indicator of stone size. We discharged patients shortly after the procedure and every child's parents were given a telephone number to report any complications. Every patient was given an appointment 2 weeks post ESWL for follow-up and KUB or U/S was obtained.

Patients were followed-up until they became stone free or for 3 months in those who not become stone free. The success of the procedure was determined by stone free-state or clinically insignificant residual fragments ≤ 4 mm.

Total of 46 children (48 Renoureteral units(RUU))- 26 were males and 20 were females aged between 7 months to 17 years (mean 7.9 years) -underwent a total of 75 ESWL session were evaluated. Stone size ranged between 5mm-30mm (mean 13.94mm) They were located in the right kidney in 18 patients, left Kidney in 15 patients right ureter in 3 patients and in 1 patient the stone location was not mentioned in patient record.

The number of treatment sessions/ Renoureteral unit ranged from 1 to 4 sessions (mean1.5 session/RUU). The number of shock waves received by each Renoureteral unit ranged between 1200-7700 shock waves (mean 3273 shocks) with power ranged between 10-14 KV.

The overall success rate was 92% with 22 patients (59.5%) who became stone free and 12 patients (32.4%) have clinically insignificant fragments \leq 4mm after 3 months of follow-up. The procedure was failed in three patients (8%).

From this study we can conclude that ESWL is a safe (at least in the short term) and effective method for treating pediatric urolithiasis.

Key words: children, urolithiasis, shock wave lithotripsy, stones.

Patterns of skin diseases among patients treated in the Dermatological Clinic at Algamhoria Teaching Hospital: 2008

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Abstract

The objective of this study is to determine the pattern and current frequency of skin diseases. It is a descriptive and prospective study based on data of new patients seen by author himself at the Dermatological Clinic of Algamhoria Teaching Hospital in Aden, during the year 2008. Data were handled by SPSS 17 program.

Nine hundred and seventy patients 56.3% females, and 43.7% males with a ratio females to males 1.3:1, were seen during the study period. The mean age of patients was 27.7 ± 13.3 years. The age group of 21-30 years was predominant.

Infectious skin diseases represented the most frequent skin disorders (35%) and among this group the fungal infectious diseases topped the list. Dermatitis-eczema consisted 27.3% and, among this group, atopic dermatitis is the most common (13.5%) followed by contact dermatitis (10.8%). Acne vulgaris, psoriasis and diseases of the hair topped the list of each group of non-infection skin diseases and were predominant in females. A high frequency of skin diseases was during the months July to September.

We conclude that the study provides rough indicators to pattern and frequency of skin diseases among our patients. Further studies are needed to find out the true indexes of the prevalence and incidence of the different types of skin diseases in Aden.

Key words: Patterns of skin diseases, Algamhoria Teaching Hospital .

Is spinal anesthesia safe for hypertensive patients undergoing surgery?

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Abstract

The present study is a perspective study to compare the effect of spinal anesthesia on two groups of patients, who are going for open transvesical Benign Hypertrophied Prostatectomy because many patients are elderly and have co-existing medical conditions. Group I (30 patients) consisted of normotensive patients and group II (30 patients) had hypertensive patients (moderate hypertension).

The study was conducted in Al-Gamhouria Hospital during February 2007-September 2009, after a written formal consent was obtained. A total of 60 patients, divided into two equal groups, were studied. The patients in both groups received hyperbaric bupivacaine 0.5% in dose of 0.2 mg/kg. A 23-gauge Quincke spinal needle was inserted at level L 3-4 in the lateral decubitus position.

The mean arterial pressure (MAP) decreased to 37.3% in group II, while the mean arterial pressure in group I decreased down to 26.4% from baseline. Hypotension with adverse effect was noted in group II.

The comparisons in the decrease of blood pressure after spinal anesthesia in each group are considered statistically significant at $p < 0.05$. All analysis was performed using the SPSS program version 9.

We have concluded that spinal anesthesia in elderly patients with moderate hypertension is not safe because MAP decreased to 37.3% from baseline and hypotension with adverse effect makes it more serious than with the normotensive patients. So, it is better to control the blood pressure with the hypertensive patients to the normal values.

Key words: Benign prostatic hypertrophy, hypertension, spinal anesthesia.

A retrospective study of post tonsillectomy haemorrhage in Aden, Yemen

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Abstract

Tonsillectomy is the most common performed operation worldwide in otolaryngology. This retrospective study was undertaken to evaluate the incidence of post tonsillectomy haemorrhage; its relation to sex and age of the patients, and to evaluate the safety of day-case tonsillectomy. The medical records of 927 tonsillectomized patients were retrospectively reviewed over a three-year period (2007 – 2009) from Almonsoora New Clinic. These patients included 339 males and 588 females, their ages ranged between 3 – 35 years. A total of 33 patients (3.6%) experienced post operative bleeding. The incidence of bleeding increased with age with high incidence percentage occurred in patients ≥ 35 years of age. No significant difference between males and females was found ($X^2 = 1.6$; $p > 0.05$).

Primary haemorrhage (<24 hours post operative) occurred in 28/33 (84.8%) patients, while secondary haemorrhage (>24 hours post operative) occurred in 5/33 (15.2%) patients. The majority of these, 24 (72.7%) patients required no active treatment, whilst 9

(27.3%) patients only required major intervention such as blood transfusion or returning to the operating room to secure haemostasis under general anesthesia. The incidence of haemorrhage was not associated with the grade or seniority of the surgeon. This study concluded that eight hours of post operative observation seems to be a reasonable and safe choice because major complications are identified within this period.

Key words: Tonsillectomy, Haemorrhage, Day-case.

PHYSICS

Radial intensity, dark spot size and the width-radius ratio of focused hollow Gaussian beam throughout the geometric focal plane

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Abstract

The radial intensity distribution for cases in which the incident complete coherence field is a focused hollow Gaussian beams (HGBs) are discussed. A numerical solution of a two-dimensional generalized Collin diffraction integral (paraxial ray) equation for a hollow Gaussian beam propagating through an apertured paraxial ABCD optical system is derived and investigated. The properties of the radial intensity distribution, dark spot size and width-radius ratio parameters of the hollow Gaussian beam throughout the geometrical focal plane are studied and an optimum value for each is calculated. It is found that the optimum values for dark spot size and width-radius ratio of the HGBs are strongly affected by the lens aperture, radius of the laser beam, focal length and the order of HGBs. It is found also that the area of the dark region across the HGBs can easily be controlled by proper choice of these parameters.

Key words: Radial intensity, dark spot size, hollow Gaussian beam, optical system.

ZOOLOGY

Investigation of possible toxic effects of Methidathion and Chlorpyrifos on the liver of male rabbits

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Abstract

The irrational use of organophosphorus insecticides in Yemen plays a crucial role in the occurrence of many diseases affecting plants, animals, and man. Methidathion (MD) and Chlorpyrifos (CF) are two of widely used organophosphorus insecticides in agriculture. The purpose of the present study is to investigate the *in vivo* effect of (MD) and (CF) on lipid peroxidation (LPO), antioxidant defense system in the liver cells and liver function in male rabbits, after orally administration of a single dose of 1/8 of LD₅₀ of (MD) and (CF) in a period of 20 days. Thirty healthy male rabbits weighing 1.4-1.6 kg. were divided into 3 groups with 10 animals in each. The first group served as control animals, receiving 3ml corn oil, while animals in the second and third groups received 1/8 of LD₅₀ of (MD) and (CF) respectively. The level of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), lactate dehydrogenase (LDH), and gamma glutamyl transferase (γ -GT) in serum were estimated, and the level of (LPO), and methylglyoxal (MG), in liver homogenate were also analyzed. Results showed a significant ($P < 0.01$) increase in all studied parameters in animals treated with (MD) and (CF) as compared to control animals. Our results emphasized the high toxicity of (MD) and (CF).

Key words: Methidathion, Chlorpyrifos, Lipid peroxidation, Liver.

ARABIC TITLES

AGRICULTURE

Effect of some plant water extracts on the growth of *Aspergillus niger* and *Aspergillus flavus*, *in vivo*

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Abstract

This aim of this study is to conduct trials in the laboratory for water extractions of some leaves belonging to the plants (Tobacco) *Nicotiana tabacum*, (Oleander) *Nerium oleander*, (Giant milkweed) *Calotropis Procera*, (Camphor) *Eucalyptus camaldulensis*, (Neem) *Azadirachta indica camaldulensis* in concentration 5, 10, 15, 20, 25%, against the fungus *Aspergillus niger*. The results showed that *N. tabacum* in concentration of 25% gave the highest effect against the fungus, where the diameter of the fungus colony didn't not exceed 7 mm, compared to untreated control that exceeded 90 mm, after 7 days of incubation. Another trial is conducted in the laboratory using the previous water extractions in the same concentrations against the fungus *Aspergillus flavus*. The results showed that the extraction obtained from the leaves of *N.*

tabacum, *N. oleander* in concentration 25% gave the highest effect, where the growth of the fungus was 0 mm for both *N. tabacum*, and *N. oleander*, compared to untreated control, which exceeded 90 mm after 7 days of incubation.

Key words: Plant extracts, fungi , *Aspergillus niger*, *Aspergillus flavus*.

Efficiency of some colored pheromone traps for monitoring fruit fly *Bactrocera zonata* (Saunders) (Tephritidae:Diptera) on mango crop in Abyan Governorate

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Abstract

This experiment was conducted in two seasons 2007/2008 and 2008/2009 at a mango production farm in Abyan Governorate to test the efficiency of colored pheromone traps for monitoring of fruit fly *B.zonata*, a pest mostly spread and damaging to mango fruits.

The study included five treatments representing colored pheromone traps with pheromone methyl Eugenol, specialized for attracting male insects under study. The treatments were: Green Delta trap + pheromone + sticking material ; White Delta trap + pheromone + sticking material; Open Yellow trap + pheromone + sticking material ; Open reinforced Carton trap + pheromone + sticking material, and open reinforced Carton trap + sticking material only.

The work was implemented during three months, from March to mid June in both seasons

The results indicated the efficiency of green Delta traps, followed by white Delta traps which are significantly different from other traps. The green Delta trap had 785 insect/trap at the end of the study and the white Delta trap had 683.3 insect/trap. The average number of fruit fly trapped by yellow trap was 480 insect/trap and 146.7 insect/trap collected by reinforced carton trap and 12.3 insect /trap in control . The result revealed a reduction in pest population in the next season compared to the first season. The green trap 383.3 on the white trap , whereas the average number of insects 209.6 insect/trap were recorded on yellow trap , and 203.0 on cartoon trap. The number of insect in the control reached 20.3 insect /trap . During the study period , the host for fruit fly was recorded . We concluded that the role of sex pheromone and trap colors attract the male fruit fly.

Key words: Fruit fly *Bactrocera zonata*, Methyl Eugenol , Mango crop.

Effect of height above sea level and the location of plant leaves on the affection by the spotting brown disease caused by *Marssonina juglandis* (Lib)Magnus on juglands in the Syrian Arab Republic

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Abstract

The study showed that the spotting brown disease of nut is one of the widespread diseases on nut trees in the area of Draykish – Tartous , where the percentage of infection was up to 95.5% and the proportion and severity of the disease in the highlands and mountains were more than the low-laying areas and valleys. Results showed that the rate and severity of infection was in the Northern side. The results also showed that rate and severity of the disease in the lower parts of trees were less than in the upper parts.

Key words :juglands, spotting brown fungi *Marssonina juglandis*, Syria.

The biological activity of soil in different locations in Abyan Delta

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Abstract

The objective of the study is to compare the Biomass and the biological activity of three different soil locations in Abyan Delta : Al- Museimer , Al- dew and Al- Sama .

Results showed a rare average biological activity in the three different soil locations, whereas no significant increase in the average of the respiration activity, (V_{sir}) and (V_{basal}) , and the phosphatase enzyme activity was recorded in Al- Museimer soil compared to Al- Dew and Al- Sama soil, respectively . Also there was no significant increase in the average nitrogen fixation and in dehydrogenase enzyme in Al- Dew soil, compared to Al-Museimer and Al- Sama soil, respectively .

More significant increase in Carbon Biomass was observed in Al – Sama soil (35.8666 Cmic/g) with an average significant increase of 65.6 % , in comparison with Al-Dew soil, and no significant increase in Al-Museimer soil (5.37 %) .

Key words: Biological activity; soil respiration; N₂-fixation; enzymes activity; Microbic biomass .

CHEMISTRY

A study of some heavy metals in the contents of the fruits and leaves of ,tomatoes and peanuts, and agricultural soils in Abyan Delta, Abyan Governorate (Yemen)

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Abstract

This study aims to evaluate the content of heavy metals, such as iron, manganese, zinc, copper, nickel, cobalt, chromium and cadmium in tomatoes and peanuts and their leaves, as well as the cultivated soils of these plants. Study samples of the fruits, leaves and soils were collected randomly from six different fields from Abyan Delta (Abyan Governorate / Yemen)- three fields for tomatoes cultivation and the other three for peanut. Concentrations of heavy metals in the studied samples were determined, using inductively coupled plasma (emission method), after double digestion of samples with acid. The results indicate that the levels of heavy elements - with the exception of iron, which its limits are not known in the specifications available - in the samples under study are within the permissible limits of its presence in agricultural soils and different plants and that the crops, tomatoes and peanuts are free of pollution with these metal.

Key words: Heavy metals, fruits and leaves of tomatoes and peanuts and agricultural soils, inductively coupled plasma.

ENGINEERING

Thermal analysis of an autonomous solar ejector air – conditioner

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Abstract

The paper provides the result of a theoretical investigation – design and thermal analysis of an autonomous solar ejector air-conditioner, using refrigerant R-236fa. (CF₃CH₂CF₃), which is harmless to the ozone scale, and Thermo mechanical feed pump.

The obtained results have been used for the development and design of domestic autonomous solar ejector air-conditioner with cooling capacity of 3 kW.

Key words: Ejector; Solar collector; Autonomous solar ejector air-conditioner; Thermo mechanical feed pump.

ENVIRONMENT

Medicinal and aromatic plants and their uses in Al-Hota and villages around – Lahj Governorate

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Abstract

Various ways of using plants and their products have been known since man had been created by God on this earth. He knew the secrets and components of these plants and tested them in different ways.

Considering the use of human secretions of plants, fruit, seeds, roots, park leaves, stems and flowers, he knew that each part of plant has its own benefit in that it is useful for a specific purpose different from the other part .

The aim of this study is to document and archeive the traditional knowledge of plants that are used in different fields of life, making them in hands of all the people interested.

In this study, 57 species that have been identified are included into 33 families.

Key words : Medicinal and aromatic plants, the part of plant used , ethinobotany