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Saponins from *Eugenia jambolana* with Antibacterial Activity Against Beta-Lactamase Producing Methicillin Resistant *Staphylococcus aureus*

R. Jasmine, B.N. Selvakumar and P. Daisy

The present study was carried out to investigate the role of *Eugenia jambolana* against the beta-lactamase producing *Staphylococcus aureus* and to isolate and identify the putative antibacterial compound based on bioassay-guided fractionation. The test bacteria were resistant to several antibiotics, including several beta-lactams. The crude plant extracts demonstrated zones of inhibition in the range of 18 mm against the chosen test bacteria. On the basis of promising activity, methanol extract was subjected to fractionation, which yielded five fractions. The effective fractions had MIC of 31.75-62.5 μg mL^{-1}. Phytochemical analyses and Thin Layer Chromatography (TLC) of the most promising fraction showed the presence of saponins as the active phytoconstituent. The active fraction was further tested for its *in vitro* haemolytic activity to sheep and human erythrocytes and demonstrated no haemolysis at recommended and higher doses. Further studies are needed to elucidate the structure of the compound and establish the mode of action of the compound against these multi drug-resistant bacteria. (*Research Journal of Medicinal Plant 1 (1): 1-6, 2007;* ***doi:*** *10.3923/rjmp.2007.1.6*)

Antibacterial Activity of Isolated Constituents and Extract of Roots of *Inula racemosa*

P.D. Lokhande, K.R. Gawai, K.M. Kodam, B.S. Kuchekar, A.R. Chabukswar and S.C. Jagdale

The resistance of different bacteria to the current antibacterial agents, toxicity of the antibacterial agents and the cost of the treatment has led to the development of new active molecules against the bacteria. Since ancient times medicinal plants have been used for the treatment of bacterial infections. The roots of the plant *Inula racemosa* has been used as folk medicine in East Asia and Europe. However, no systematic data is available on the antibacterial activity profile of the different constituents of *Inula racemosa*. In the present studies, attempt has been made for isolation of root constituents of *Inula racemosa* (Compositae) and evaluation of its antibacterial activity. The constituents were isolated and purified by column chromatography. The structure of the isolated constituents were confirmed by spectral analysis and were used for the determination of the

antibacterial activity of *Inula racemosa* against various microorganisms. The constituent alantolactone showed maximum antibacterial activity as compared to other constituents and ethyl acetate extract of the roots. *(Research Journal of Medicinal Plant 1 (1): 7-12, 2007;* ***doi:*** *10.3923/rjmp.2007.7.12)*

In vitro Antioxidant Activity of Ethanolic Extracts of *Centella asiatica, Punica granatum, Glycyrrhiza glabra* and *Areca catechu*

M.S. Ashawat, Saraf Shailendra and Saraf Swarnlata

The present investigation deals with antioxidant activities of the ethanolic extract of *C. asiatica* fresh leaves, *P. granatum* seeds, *G. glabra* dry root and *A. catechu* nuts. The effects of all ethanolic extracts of the herbs were studied via reducing power estimation method. The antioxidant activities of the extracts were compared with standard i.e., of ascorbic acid. The equal amount of extract and ascorbic acid combination antioxidant activity was also studied to know the synergistic effect of chemical and extract in any pharmaceutical and cosmetic formulations. The individual antioxidant activity of *C. asiatica*, *P. granatum*, *G. glabra* and *A. catechu* were found to be 8.23±0.12, 24.35±0.25, 24.25±0.52, 31.31±1.80%, respectively to the standard indicating antioxidant activity to all ethanolic extracts, but catechu showed highest activity ($p<0.05$). The combined antioxidant activity (ascorbic acid with extracts) showed additive synergistic effect as compared to standard i.e., 110.51±0.422, 127.51±0.745, 128.09±0.235, 134.73±0.60, respectively with each extract. These studies may suggest that the combination of chemical with extract as antioxidant can be utilized in pharmaceutical and cosmetic formulation or chemical antioxidant replaced by herbal natural antioxidants. *(Research Journal of Medicinal Plant 1 (1): 13-16, 2007;* ***doi:*** *10.3923/rjmp.2007.13.16)*

Increase Insulin Activity by *Phyllanthus amarus* Linn on Liver Cell Regeneration in Partially Hepatectomised Albino Rats

P. Chattopadhyay, A. Garg, V.P. Varshey, A.K. Sharma and S.S. Agrawal

The hydroalcoholic extract of whole plant of *Phyllanthus amarus* Linn showed significant increase in activity of insulin at 200 mg kg^{-1} dose in regenerative hepatocytes against alcohol induced liver cell injury in partially hepatectomised albino rats. The blood sample were collected from the abdominal aorta and the serum insulin estimated by radio immuno assay and regenerative capacity measured by thymidine kinase assay by ^{3}H thymidine incorporation into hepatic

DNA which showed that *Phyllanthus amarus* Linn has a potential role in insulin action during liver cell regeneration. *(Research Journal of Medicinal Plant 1 (1): 17-20, 2007;* ***doi:*** *10.3923/rjmp.2007.17.20*)

Antimicrobial Properties of *Osmanthus fragrans* (Lour)

Ashok Kumar and Deepak Ganjewala

The ethanol extract and essential oil of *Osmanthus fragrans* (Lour.) family (Oleaccae) were evaluated for antimicrobial action on *Staphylococcus aureus*, *Bacillus cereus*, *Salmonella typhi* and *Shigella dysentery* by using agar disc diffusion method. Essential oil have shown strongest inhibitory effect against *Staphylococcus aureus*, *Bacillus cereus* and *Salmonella typhi*. Ethanol extract had less antimicrobial activity against the microorganisms tested. However, both essential oil and ethanol extract had no inhibitory effect against *Escherichia coli* and *Pseudomonas*. *Shigella dysentery* in particular was more susceptible for essential oil. Results have shown that essential oil had two fold more antibacterial activities as compared to that of ethanol extract. The minimum concentration of ethanol extract and essential oil used was 0.0625 mg mL^{-1}. *(Research Journal of Medicinal Plant 1 (1): 21-24, 2007;* ***doi:*** *10.3923/rjmp.2007.21.24*)

Anti-microbial Activity of *Acacia nilotica* Extracts Against Some Bacteria Isolated from Clinical Specimens

Abeer M. Haj Ali and Sanaa O. Yagoub

The comparative antimicrobial activity of ethanol and chloroform extracts from *Acacia nilotica* fruit was studied. The bacteria isolated from abscesses or wounds of hospitalized patients were *Staphylococcus aureus*, *Escherichia coli*, *Proteus vulgaris*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. The susceptibility of isolated bacteria against ethanol extract (13, 6.7, 5, 3 and 1%) was higher than chlorform extract used in similar concentrations especially *S. aureus* (30-4 mm), *E. coli* (25-9 mm), *Kl. pneumonia* (18-0 mm), *P. vulgaris* (10-1 mm) and *Ps. aeruginosa* (20-4 mm). The inhibitory effects of the extracts on bacteria were compared with those of selected antibiotics. The ethanol extract of *A. nilotica* fruit was either equally or more effective than the test antibiotics. *(Research Journal of Medicinal Plant 1 (1): 25-28, 2007;* ***doi:*** *10.3923/rjmp.2007.25.28*)

Some Medicinal Flora of Okomu Forest Reserve in Southern Nigeria

M. Idu and O.O. Osemwegie

A survey of useful medicinal plants of Okomu Forest Reserve was undertaken and a total of 60 species of plants comprising of 50 leafy plants and 10 mushrooms were identified and recognized to be useful in native health care services by inhabitants of various communities in the South-South of Nigeria. Different southern Nigerian communities show not only individual characteristic dialect, culture and therapeutic practices involving the application of ethnomedicinal plants but also share common indigenous folk knowledge of what plant is used for the treatment of which ailment. Studies also show that 75% of men in most rural communities visited have inherited ethnobotanical knowledge from their fathers. *(Research Journal of Medicinal Plant 1 (1): 29-31, 2007;* ***doi:*** *10.3923/rjmp.2007.29.31*)

Medicinal Plants of Edo State, Nigeria

M. Idu and H.I. Onyibe

An ethno-medical field survey was carried in communities spanning the three vegetation (Fresh Water Swamp, Lowland Rain Forest and Derived Savanna) zones of Edo State, Nigeria. 300 plant species distributed in 247 genera, belonging to 77 families, used in the treatment of various diseases were enumerated, identified and their ethnomedical value documented. The most used species include: *Ageratum conyzoides*, *Asystasia gangetica*, *Azadirachta indica*, *Calopogonium muconoides*, *Carica papaya*, *Chromolaena odorata*, *Citrus aurantifolia*, *Citrus sinensis*, *Cocos nucifera*, *Colocasia esculenta*, *Commelina erecta*, *Elaeis guineensis*, *Eleusine indica*, *Ficus benghalensis*, *Gmelina arborea*, *Hura crepitans*, *Irvingia gabonensis*, *Mangifera indica*, *Manihot esculenta*, *Musa paradisiaca*, *Musa sapientum*, *Nauclea pobeguinii*, *Newbouldia laevis*, *Phyllanthus amarus*, *Psidium guajava*, *Sida acuta*, *Spondias mombin* and *Synedrella nodiflora*. Leaves and roots were the most frequently used plant parts while malaria fever, muscular pains, gastrointestinal problems, cardiovascular problems, bronchial problems and skin infections are amongst the frequently managed conditions malaria fever, muscular pains, gastrointestinal problems, cardiovascular problems, bronchial problems and skin infections among others. *(Research Journal of Medicinal Plant 1 (2): 32-41, 2007;* ***doi:*** *10.3923/rjmp.2007.32.41)*

Regeneration of Plantlets from Embryo Explants of *Bunium Persicum* (Boiss.) B. Fedtsch

M. Valizadeh, S.K. Kazemi Tabar and G.A. Nematzadeh

A new simple method was developed for regeneration of Parsi Zira. This method yielded a large number of shoots within short period of time (30-40 days) without any sub culturing. The effect of various combinations of Plant Growth Regulators (PGRs) on callus formation and shoot regeneration were investigated on MS medium. Simultaneous callus and root formation and shoot regeneration were obtained. The experiment was conducted in a completely randomized design with 30 treatments and 10 replications per treatment. The best treatment for regeneration was the medium supplemented with 0.1 mg L^{-1} α-Naphthalene Acetic Acid (NAA) and 2 mg L^{-1} kinetin (Kin). The highest somatic embryogenesis was obtained in the treatment containing 0.1 mg L^{-1} NAA and 0.5 mg L^{-1} Kin. The medium containing 2 mg L^{-1} NAA and 2 mg L^{-1} Kin was the best treatment for callus and root induction and regeneration simultaneously. *(Research Journal of Medicinal Plant 1 (2): 42-47, 2007;* ***doi:*** *10.3923/rjmp.2007.42.47)*

Effect of Plant Growth Regulators on Callus Induction and Regeneration of *Bunium persicum* (Boiss.) B. Fedtsch

M. Valizadeh, S.K. Kazemi Tabar and G.A. Nematzadeh

The effect of various media and combinations of Plant Growth Regulators (PGRs) on callus induction and shoot regeneration from hypocotyl explant were investigated. Simultaneous callus and shoot regeneration were obtained. The experiment was conducted as a completely randomized design. The highest callus frequency was observed on MS medium containing 0.1 mg L^{-1} 2,4-dichlorophenoxyacetic acid (2,4-D) or 1 mg L^{-1} 2,4-D as well as 2 mg L^{-1} 2,4-D and 0.5 mg L^{-1} Kinetin (Kin). The best response for shoot regeneration was observed on MS medium containing 1 mg L^{-1} 2,4-D. MS medium supplemented with 1 mg L^{-1} 2,4-D was the best for callus induction and shoot regeneration simultaneously. The regenerated plantlets were transferred to basal medium to be rooted. However suitable combination of auxins and cytokinins are important for embryogenesis and organogenesis. For the exploitation of *in vitro* techniques it is essential to optimize the conditions for whole plant regeneration. *(Research Journal of Medicinal Plant 1 (2): 48-53, 2007;* ***doi:*** *10.3923/rjmp.2007.48.53)*

Analgesic, Antipyretic and Ulcerogenic Effects of Indian Ayurvedic Herbal Formulation Triphala

E.P. Sabina and M. Rasool

An Indian ayurvedic herbal formulation, Triphala (500/1000 kg^{-1} $b.wt^{-1}$) was assessed for analgesic, antipyretic and ulcerogenic activities on the experimental models in mice. For comparison purpose, non-steroidal anti-inflammatory drug Indomethacin (10 mg kg^{-1} $b.wt^{-1}$) was used as a standard. It was found that Triphala at both the dose levels produced excellent analgesic and antipyretic effect, with the absence of gastric damage. The results obtained clearly show that Triphala possesses potent analgesic, antipyretic and gastroprotective effect. *(Research Journal of Medicinal Plant 1(2): 54-59, 2007;* ***doi:*** *10.3923/rjmp.2007.54.59)*

Antimicrobial Activity of Cassava Seed Oil on Skin Pathogenic Microorganisms

T.O.S. Popoola, O.D. Yangomodou and A.K. Akintokun

An assessment of the antimicrobial activity of oil extracted from cassava (*Manihot esculenta*. Crantz) seeds was investigated using agar-well diffusion method against clinical isolates of *Staphylococcus aureus*, *Propionibacterium acnes*, *Escherichia coli*, *Pityrosporium ovale* and *Candida albicans* which were isolated from skin infections. The results of the investigation showed that cassava seed oil had inhibitory effect on the growth of all the test isolates. Significant differences ($p<0.05$) were observed in the degree of inhibition of the isolates, but non-significant variations were observed in inhibition among strains of the same species. The most pronounced inhibition as confirmed by the zones of inhibition around growing colonies was on *S. aureus*; *P. acnes* was moderately inhibited, while inhibition of growth of *E. coli* was mild. Growth inhibition by the oil was not significant ($p>0.05$) between *P. ovale* and *C. albicans*. The inhibitory ability of the oil decreases with a decrease in concentration of oil in the solvent, resulting in marked variation in the minimum inhibitory concentration. The implication of this observation is that the oil may be of medical and particularly dermatological importance. *(Research Journal of Medicinal Plant 1 (2): 60-64, 2007;* ***doi:*** *10.3923/rjmp.2007.60.64)*

An Antisalmonellal Agent and a New Dihydroanthracenone from *Cassia petersiana*

Pierre C. Djemgou, Donatien Gatsing, Marguerite Kenmogne, Dieudonné Ngamga, Roseline Aliyu, Abiodun H. Adebayo, Pierre Tane, Bonaventure T. Ngadjui, Elisabeth Seguin and Godwin I. Adoga

Phytochemical and biological investigation of the leaves of *Cassia petersiana* afforded four compounds including a new dihydroanthracenone (1), two known chromones (2,3), in addition to stigmasterol glucoside (4). The work was guided by the antisalmonellal activity of the extract and fractions. Compound 4 was found to be the active principle. The structures of the compounds were determined by combination of spectroscopic techniques, including ^{1}H, ^{13}C, DEPT, COSY, HMQC, HMBC, MS and IR. *(Research Journal of Medicinal Plant 1 (2): 65-71, 2007; **doi**: 10.3923/rjmp.2007.65.71)*

Isolation of Bactericidal Constituents from the Stem Bark Extract of *Grewia tiliaefolia* Vahl.

B. Mohamed Khadeer Ahamed, V. Krishna, Harish B. Gowdru, H. Rajanaika, H.M. Kumaraswamy, Sharath Rajshekarappa, Chethan J. Dandin and K.M. Mahadevan

Grewia tiliaefolia (Tiliaceae) is a subtropical medicinal tree, the stem bark is widely used in traditional Indian medicines to cure pneumonia, bronchitis and urinary infectious disorders. Antibacterial activity of sequential extracts of the stem bark and constituents isolated from petroleum ether extract were screened against eighteen clinical strains belonging to *Pseudomonas aeruginosa* and *Klebsiella pneumonia* collected from hospitalized patients suffering from different kinds of infectious ailments. Two steroids β-sitosterol, stigmasterol and a triterpenoid lupeol were isolated from petroleum ether extract. The compounds were characterized by UV, IR, ^{1}H NMR, ^{13}C NMR and mass spectral studies. Minimum inhibitory concentrations of petroleum ether, chloroform and methanolic extracts were 120, 150 and 210 μg per 100 μL, respectively. Minimum inhibitory concentrations for isolated constituents β-sitosterol, stigmasterol and lupeol were 80, 70 and 30 μg per 100 μL, respectively. Among the three crude extracts and the three bioactive constituents tested, petroleum ether extract and the lupeol showed significant zones of inhibition in the cultures of both bacterial strains. The activity was moderate in steroids loaded wells. Results of this investigation provide a supportive scientific evidence for the medicinal use of *Grewia tiliaefolia*. *(Research Journal of Medicinal Plant 1 (3): 72-82, 2007; **doi**: 10.3923/rjmp.2007.72.82)*

Effect of a Herbal Drug, Cogent db on Plasma and Tissue Glycoproteins in Alloxan-Induced Diabetic Rats

G. Saravanan and L. Pari

Cogent db, a poly herbal drug, was investigated for its beneficial effect in diabetic rats on derangement in glycoprotein components. Diabetes was induced in male albino Wistar rats by a single intraperitoneal injection of alloxan (150 mg kg^{-1}) and the animals were divided into 5 groups as follows: Group 1: Normal untreated rats, Group 2: Normal rats treated with Cogent db (450 mg kg^{-1}), Group 3: Diabetic control rats, Group 4: Diabetic rats treated with Cogent db (450 mg kg^{-1}) and Group 5: Diabetic rats treated with glibenclamide (600 μg kg^{-1}). The effect of Cogent db on blood glucose, plasma insulin, urine sugar, plasma and tissue glycoproteins studied was in comparison to glibenclamide, a standard reference drug. The levels of blood glucose, urine sugar, plasma glycoproteins were increased significantly whereas the level of plasma insulin was significantly decreased in diabetic rats. There was a significant decrease in the level of sialic acid and elevated levels of hexose, hexosamine, fucose in the liver and kidney of diabetic rats. Oral administration of Cogent db to diabetic rats for 45 days significantly decreased levels of blood glucose, urine sugar and plasma glycoproteins. On the other hand, the levels of plasma insulin and tissue sialic acid were increased while the levels of tissue hexose, hexosamine and fucose were near normal. Cogent db was more effective than glibenclamide in restoring the values of these parameters. It is likely that the changes in glycoprotein metabolism induced by hyperglycaemia will have biological and possibly pathological importance in the development of diabetic complications. The present investigation indicates that Cogent db treatment possesses a significant beneficial effect on glycoproteins in addition to its antidiabetic action. *(Research Journal of Medicinal Plant 1 (3): 83-91, 2007;* ***doi:*** *10.3923/rjmp.2007.83.91)*

In vitro Biological Activities of *Carica papaya*

Olawale H. Oladimeji, Rene Nia, Kalu Ndukwe and Emmanuel Attih

The present study was designed with the aim of confirming or otherwise the ethno-medicinal claims of *C. papaya* in the treatment and or management of ailments such as ringworm, digestive disorders, fevers and tumors. Hence, the anti-microbial, larvicidal and brine-shrimp lethality studies on leaves, stem and roots extracts were carried out. The extracts and fractions of roots elicited good anti-microbial activity against *B. subtilis*, *S. aureus* but gave minimal activity against

E. coli, *S. typhi* and *K. pneumoniae* and none against fungal isolates (*A. niger* and *C. albicans*). Both the leaves and stem, however afforded lesser activities. The larvicidal activity determined in terms of percentage mortality showed that the roots gave moderate larvicidal activity (LA%) of 40 and 55% (at 5%w/v) while the activity was potent at 70 and 80% (at 10% w/v) both at 12 and 24 h incubation respectively. However, the activity displayed by both the leaves and stem was insignificant. Interestingly, the brine-shrimp lethality assay; analyzed using the Finney probit method, showed the leaves displayed a significant LD_{50} value at 2.7 ppm, while the stem and roots gave moderate LD_{50} values at 384 and 272 ppm respectively compared with literature values below the 200 ppm which are generally considered significant. These findings indicate a potential of the plant to serve as panacea for infectious diseases and also lend scientific justification to some of the folkloric uses. *(Research Journal of Medicinal Plant 1 (3): 92-99, 2007; **doi:** 10.3923/rjmp.2007.92.99)*

Anticancerous Effect of *Hibiscus sabdariffa* Leaves on Hepatocellular Carcinoma Cell Line Hep 3B

A. Umamaheswari and Nivedita Govindan

Hibiscus sabdariffa L. (Malvaceae) is a natural plant containing a lot of pigments that was found to possess anti-oxidant activity. Therefore, the present study was aimed to evaluate the anticancer potential of *Hibiscus sabdariffa* (*H. sabdariffa*) leaves on Hep 3B. Different extracts of methanol, ethanol, ethyl acetate and chloroform were prepared and tested for their cytotoxic effect by MTT assay in a dose and time dependent manner. Among the different organic solvent extracts tested, methanolic extract showed a greater cytotoxic effect (i.e.,) IC 50 value of 50% reduction when compared to others. The time required to show 75% decrease in cell number was found to be 24 h. *(Research Journal of Medicinal Plant 1 (3): 100-105, 2007; **doi:** 10.3923/rjmp.2007.100.105)*

A New Steroid and α-glucosidase Inhibitors from *Anthocleista schweinfurthii*

R.N. Mbouangouere, P. Tane, D. Ngamga, S.N. Khan, M.I. Choudhary and B.T. Ngadjui

The dichloomethane/methanol extract of the roots of *Anthocleista schweinfurthii* Gilg. has provided a new steroid, schweinfurthiin 1, two known compounds, bauerenone 2 and bauerenol 3 which were found to be highly promising α-

glucosidase inhibitors. Along with these, two known xanthones, 1-hydroxy-3, 7, 8-trimethoxyxanthone 4 and 1, 8-dihydroxy-3, 7-dimethoxyxanthone 5 were also isolated. *(Research Journal of Medicinal Plant 1 (3): 106-111, 2007; **doi:** 10.3923/rjmp.2007.106.111)*

Role of Terpenoids From *Elephantopus scaber* Against a Few Extended Spectrum β-Lactamase Producers

R. Jasmine, P. Daisy and B.N. Selvakumar

The extended spectrum β-lactamase producers are highly resistant to several conventional antibiotics. Hence efforts are now taken to screen few medicinal plants against the ESBL producers. Among the several plants screened, we have chosen to screen the alcohol extracts of a traditional medicinal plant, *Elephantopus scaber* (Asteraceae) against ESBL producers. ESBL producers were screened by double disc synergy test. Methanol, hexane and acetone extracts of *Elephantopus scaber* were investigated for their ability to inhibit the growth of extended spectrum β-lactamases (ESBL) producing multidrug-resistant enteric bacteria by the disc diffusion method. MICs were determined by micro broth dilution method. The crude plant extracts demonstrated zones of inhibition in the range of 5-16 mm against the chosen test bacteria. On the basis of promising activity, acetone extracts were selected to determine their efficacy in terms of Minimal Inhibitory Concentration (MIC), which ranged from 1.6-25 mg mL^{-1}. The acetone extract was subjected to activity-guided fractionation. The most effective fraction had a MIC of 62.5-250 μg mL^{-1}. Phytochemical analysis showed the presence of terpenoids, proteins and traces of steroids. TLC bioautography of the fraction showed the active compound to be terpenoids. The fraction was further tested for their *in vivo* cytotoxic activity to mammalian system using rats. No marked manifestations were observed. Normal liver and kidney functioning were also observed. The strong *in vitro* antibacterial activity of terpenoid derivatives against ESβL-producing Gram-negative bacteria suggests the compounds might find wide pharmaceutical use. *(Research Journal of Medicinal Plant 1 (4): 112-120, 2007; **doi:** 10.3923/rjmp.2007.112.120)*

Effects of Ethanolic Fruit Extract of *Parinari polyandra* (Rosaceae) on Serum Lipid Profile and Some Electrolytes in Pregnant Rabbits

A.O. Abolaji, A.H. Adebayo and O.S. Odesanmi

The effects of the ethanolic fruit extract of *Parinari polyandra* on lipid profile and electrolyte levels in pregnant rabbits were investigated. Graded concentrations of 0, 10, 50 and 250 mg kg^{-1} body weight of the extracts were administered by gastric intubations for a period of 14 days from the 12th -25th day of gestation after which they were fasted for 18 h. The following lipid profiles were examined in the serum. Triglyceride, Total Cholesterol, High Density Lipoprotein (HDL) and Low Density Lipoprotein (LDL) cholesterol. Serum electrolytes also examined were: Sodium (Na^+), Potassium (K^+), Calcium(Ca^{2+}), Chloride (Cl^-), Bicarbonate(HCO_3^-) and Phosphorus (P). After these durations of treatment, there was significant elevation in triglycerides ($p<0.01$). The LDL/HDL Cholesterol ratio was greater than 0.3 in all the treated groups. Also, there were significant elevations in Na^+ ($p<0.05$), Cl-($p<0.05$), P ($p<0.05$) and Ca^{2+} ($p<0.05$). The result therefore suggests that the ethanolic fruit extract of *Parinari polyandra* may predispose to hyperlipidemia and electrolytes imbalance leading to hypercalcaemia and high risk of raised blood pressure in pregnant rabbits. *(Research Journal of Medicinal Plant 1 (4): 121-127, 2007;* ***doi:*** *10.3923/rjmp.2007.121.127)*

Ethnobotanical Studies on Medicinal Plants Used by the Chenchus of Nallamalais in Kurnool District, Andhra Pradesh, India

C. Sudhakar Reddy, K.N. Reddy, K. Thulsi Rao and Chiranjibi Pattanaik

Ethnobotanical studies were carried out to collect information on the use of medicinal plants by the Chenchus who live in forests of Nallamalais in Kurnool district, Andhra Pradesh, India. Ethnomedicinal uses of 51 plant species along with local name, botanical name, family, part used, ailments for which the drug is administrated, mode of administration are presented. They belong to 48 genera and 33 angiospermous families. These plants use to cure 26 ailments. Most remedies were taken orally, accounting for 62% of medicinal use. Most of the remedies were reported to have been from herbs (37.3%) and tree (33.3%) species. The most widely sought after plant parts in the preparation of remedies in the areas are the root (14) and stem bark (12). Chenchus have high number of medicinal plant species for the treatment of fever and skin diseases. *(Research Journal of Medicinal Plant 1 (4): 128-133, 2007;* ***doi:*** *10.3923/rjmp.2007.128.133)*

Antidiabetic Effects of *Homalium letestui* (Flacourtiaceae) in Streptozotocin Induced Diabetic Rats

Jude E. Okokon, Bassey S. Antia and Basil N. Ita

Evaluation of antidiabetic activity of ethanolic root extract of *Homalium letestui* in rats was carried out. Antidiabetic potentials of the plant *Homalium letestui* extract (500-1000 mg kg^{-1}) was investigated in streptozotocin induced diabetes in rats. Treatment of streptozotocin diabetic rats with the extract caused a significant ($p<0.01$) reduction in fasting Blood Glucose Levels (BGL) of the diabetic rats both in acute study and prolonged treatment (2 weeks). The activity of the extract was comparable to that of the reference drug, glibenclamide. This results suggest that the root extract of *Homalium letestui* possesses antidiabetic effect on streptozotocin induced diabetic rat. *(Research Journal of Medicinal Plant 1 (4): 134-138, 2007; **doi:** 10.3923/rjmp.2007.134.138)*

Effect of Aqueous *Nauclea pobeguinii* Leaf Extract on Rats Induced with Hepatic Injury

Helen Kadiri, Ese Adegor and Samuel Ogheneovo Asagba

Forty male albino rats (Wistar strain) weighing between 150 and 170 g were used to study the antioxidant property of *Nauclea pobeguinii* extract. The rats were divided into four groups, each group consisting of 10 animals. The antioxidant activity of the extract was evaluated using CCl_4-induced lipid peroxidation model. Group one was kept on normal diet and served as control, the second group received the extract alone three times daily for 10 days by oral route, the third received only CCl_4 in olive oil by subcutaneous injection, while the fourth group received the extract at the same dose and duration as group two before exposure to CCl_4. Eighteen hours after CCl_4 administration, the animals were sacrificed, blood was collected and serum separated for analysis. Biochemical analysis of serum indicate increased activities of L-alanine aminotransferase (L-ALT), L-aspartate aminotransferase (L-AST) and alkaline phosphatase (ALP) in CCl_4 administered rats which is an indication of liver damage occassioned by lipid peroxidation. Prior treatment of CCl_4 exposed rats with the plant extract lowered the serum activities of these enzymes to levels that were comparable to control. The study indicates that aqueous extract of *N. pobeguinii* possess antioxidant property since it improves recovery or reduces the toxic effects of CCl_4 in liver cells of male rats. *(Research Journal of Medicinal Plant 1 (4): 139-143, 2007; **doi:** 10.3923/rjmp.2007.139.143)*

Enumeration of Antidiabetic Herbal Flora of Tamil Nadu

R. Jeyachandran and A. Mahesh

This study showed the first had information on 57 interesting medicinal herbal plants used by tribal people, Vaidyas, Siddha and Ayurveda for diabetes mellitus. Present enumeration of antidiabetic herbal flora of Tamil Nadu includes information regarding previous findings. This information's were gathered at the time of field study from various local inhabitants, viz., vaidyas. Medicinal plant seller, healers, priests, hakims and local elderly people. Furthermore, information's regarding antidiabetic nature of plants were confirmed by previous findings reported in various national and international journals. *(Research Journal of Medicinal Plant 1 (4): 144-148, 2007;* ***doi:*** *10.3923/rjmp.2007.144.148)*

Preliminary Phytochemistry and Antimicrobial Properties of *Stachytarpheta jamaicensis* (Linn.) Vahl. Stem

M. Idu, E.K.I. Omogbai, G.E. Aghimien, F. Amaechina, O. Timothy and S.E. Omonigho

The phytochemical analysis on stems of *Stachytarpheta jamaicensis* proved the presence of secondary metabolites, including; tannins, saponins and flavonoids Crude concentrations of aqueous extract of stem showed antimicrobial activity on *Bacillus subtilis*, *Escherichia coli*, *Candida albicans*, *Staphylococcus aureus*, *Pseudomonas aureginosa* and slight activity on *Proteus vulgaris* while the alcoholic extract had almost similar activity, but lesser activity was observed on *Escherichia coli*. *(Research Journal of Medicinal Plant 1 (4): 149-153, 2007;* ***doi:*** *10.3923/rjmp.2007.149.153)*

Hypolipidaemic and Cardioprotective Activity of *Mammea africana*

Jude E. Okokon and Bassey S. Antia

The effect of ethanolic stembark extract of *Mammea africana* Sabine on total cholesterol, triglyceride and lipoproteins levels was studied on normal rats. The extract (30-90 mg kg^{-1}) was orally administered to rats for 21 days after which they were sacrificed and blood taken for analysis. The extract produced a significant ($p<0.05$) dose-dependent decrease in the levels of total cholesterol, triglyceride, LDL-cholesterol and VLDL cholesterol, with a significant ($p<0.05$)

increase in the level of HDL-cholesterol. The stembark extract has the potential to produce hypolipidaemia as well as preventing the development of atherosclerosis. *(Research Journal of Medicinal Plant 1 (4): 154-157, 2007; **doi:** 10.3923/rjmp.2007.154.157)*

Micropropagation, Isolation and Characterization of Berberine from Leaves of *Naravelia zeylanica* (L.) DC.

H. Raja Naika and V. Krishna

An *in vitro* regeneration protocol was standardized using leaf explants of *Naravelia zeylanica* (Ranunculaceae) a rare medicinal plant of the Western Ghats, India. The adventitious shoot buds were organized directly from mid veins and margin of the excised leaf explants cultured on MS-medium fortified with a range of 2.0 to 3.0 mg L^{-1} BAP and 0.3 to 0.7 mg L^{-1} IBA. The frequency of shoot bud organogenesis was the highest (14.9±0.27 shoots per explants) at the concentration of 2.5 mg L^{-1} BAP and 0.5 mg L^{-1} IBA. The excised micro shoots were pretreated in 0.5 mg L^{-1} IBA and transferred to MS half strength semisolid medium induced root initials from the cut ends. A mean of 13.5±0.30 root intact plantlets was recovered per explants showed morphological similarity with the *in vivo* plants. Two hundred and fifty gram of the powdered leaves from *in vivo* plants of *N. zeylanica* was subjected to Soxhlet extraction using methanol. Ten gram of each of the extracts were used for total alkaloid isolation and the yield was 270 mg. An alkaloid berberine was isolated by preparative TLC method using the solvent system methanol, water and ammonium hydroxide in the ratio 8: 1: 1 v/v. The characterization of the constituent was confirmed by IR, ^{1}HNMR and Mass spectral studies. *(Research Journal of Medicinal Plant 2 (1): 1-9, 2008; **doi:** 10.3923/rjmp.2008.1.9)*

Comparative Evaluation of Antihyperglycaemic and Hypoglycaemic Activity of Various Parts of *Catharanthus roseus* Linn.

E. Edwin Jarald, E. Sheeja, S. Motwani, K.R. Dutt and R.K. Goel

Hydroalcoholic extracts of flowers, leaves, stems and roots of *Catharanthus roseus* Linn. (Apocynaceae) were tested for antihyperglycaemic and hypoglycaemic activities. Antihyperglycaemic activity was tested in glucose over loaded hyperglycemic rats and hypoglycaemic activity in fasted normal rats at two

dose levels, 100 and 200 mg kg^{-1}, respectively. Glimepride 0.1 mg kg^{-1} was used as the reference drug for both the activities. Results showed that the hydroalcoholic extracts of every part tested, exhibited significant antihyperglycaemic and hypoglycaemic activity. Comparatively the hydroalcoholic extract of leaves exhibited better activity, next to this stems and flowers were equally effective followed by roots. This study gives an indication to traditional healers those who use different parts of this plant to use the active part that has the ability to manage the complications of diabetes. *(Research Journal of Medicinal Plant 2 (1): 10-15, 2008;* ***doi:*** *10.3923/rjmp.2008.10.15)*

Checklist and Conservation of Botanicals Used for Natality by the Okpe-Speaking People of Delta State, Nigeria

J. Kayode, E.S. Christmas and G.M. Kayode

A combination of social survey and direct field observation was used to identify and determine the conservation status of botanicals used by the indigenous okpe-speaking people of Delta State, Nigeria during natality periods. While a total of 11 botanicals belonging to 11 different families were found to be widely utilized during the pre-natal periods, another 10 botanicals, belonging to 10 different families were widely utilized during the post-natal periods. Only 7 of these botanicals were cultivated. Among the uncultivated botanicals, only 4 were regularly preserved in the study area. Over 40% of the botanicals were sourced from the forest and some of the botanicals were harvested by annihilative extraction methods. Over 40% of the botanicals were presently rare on the abundance scale. Sustainable strategies that could enhance the conservation of these species were proposed. *(Research Journal of Medicinal Plant 2 (1): 16-21, 2008;* ***doi:*** *10.3923/rjmp.2008.16.21)*

Role of *Elephantopus scaber* on the Glucose Oxidation in Liver and Skeletal Muscles of Streptozotocin (STZ) Induced Diabetic Adult Male Rats

P. Daisy and R. Jasmine

In type-II diabetic individuals, there is an increase in hepatic glucose production impaired insulin signaling, decreased glucose transport and phosphorylation and diminished glycogen synthesis contribute to insulin resistance in target tissues. Liver and skeletal muscles are major target sites for insulin-mediated glucose uptake,

metabolism and utilization in humans. Indeed, impaired insulin action in liver and skeletal muscles is responsible for the majority of the decreased levels of non-oxidative glucose disposal observed in type II diabetes. The influences of *Elephantopus scaber* (ES) (roots and leaves) on glucose oxidation in liver and skeletal muscles were studied. The present study shows that *E. scaber* extracts have a positive role in glucose oxidation and corrects the metabolic alterations caused by diabetes effectively. A significant reduction in the blood glucose levels and a corresponding increase in the serum insulin levels further proves the hypoglycemic activity of the plant by oxidation of glucose. These observed effects of *E. scaber* on glucose oxidation in liver and skeletal muscles are comparable to the effects of insulin and suggest a possible therapeutic effect of *E. scaber* on glucose oxidation in diabetes. Further studies on the isolation of active compounds and determining their mode of action would be of great interest. *(Research Journal of Medicinal Plant 2 (1): 22-27, 2008;* ***doi:*** *10.3923/rjmp.2008.22.27)*

Antiperoxidative Effect of *Withania somnifera* Root Powder on Liver Lipid Peroxidation and Antioxidant Status in Adjuvant-induced Arthritic Rats

M. Rasool and P. Varalakshmi

The present study was carried out to evaluate the antiperoxidative effect of *Withania somnifera* Linn. Dunal (family-Solanaceae) on liver lipid peroxidation and antioxidant status in adjuvant induced arthritic rats. Results were compared with those for Indomethacin, a non steroidal anti-inflammatory drug. Arthritis was induced by intra dermal injection of complete freund's adjuvant (0.1 mL) in to the right hind paw of Wistar albino rats. *Withania somnifera* root powder (1000 mg kg^{-1} b.wt.) and indomethacin (3 mg kg^{-1} b.wt.) were orally administered for 8 days beginning 11 days after adjuvant injection. The antiperoxidative effect of *Withania somnifera* root powder was investigated by measuring changes in lipid peroxidation and antioxidant status of liver in arthritic animals. Results of the present investigation showed significant decrease in the level of lipid peroxides, constituents with the increased enzymic antioxidants and depleted non-enzymic anti-oxidant status in arthritic animals. The oral administration of *Withania somnifera* root powder (1000 mg kg^{-1} b.wt.) modulated the above altered lipid peroxidation and antioxidant status to near normal levels in arthritic animals. *(Research Journal of Medicinal Plant 2 (1): 28-33, 2008;* ***doi:*** *10.3923/rjmp.2008.28.33)*

The Phytochemical Screening and Antimicrobial Activity of Leaf Extracts of *Eucalyptus camaldulensis* and *Eucalyptus torelliana* (Myrtaceae)

B.A. Adeniyi and O.O. Ayepola

Extracts of leaves of *Eucalyptus camaldulensis* and *Eucalyptus torelliana* were screened phytochemically for the presence of secondary metabolites and for *in vitro* antibacterial properties. Methanol and dichloromethane extracts of leaves of *Eucalyptus camaldulensis* and *Eucalyptus torelliana* were studied for their antibacterial activity against 8 clinically isolated organisms of gastrointestinal origin viz., *Klebsiella species* UCH 2101, *Proteus mirabilis* UCH 2102, *Proteus mirabilis* UCH 2204, *Salmonella typhi* UCH 2201, *Escherichia coli* CHO 3101, *Escherichia coli* UCH 2103, *Pseudomonas aeruginosa* CHO 3102 and *Pseudomonas aeruginosa* UCH 2203. The result of the phytochemical screening showed that both extracts contained tannins, saponins, cardiac glycosides but in addition to these, *E. torelliana* was found to contain anthraquinones. Both extracts were also found to inhibit all the isolates at 10 mg mL^{-1} concentration. The diameter of zones of inhibition exhibited by the extracts was between 10 and 22 mm. The methanol extracts compared favorably with gentamycin used as a standard control. The minimum inhibitory concentrations determined by the agar dilution method were between 0.04 and 10 mg mL^{-1}. The results obtained from this study reveals that extracts of *Eucalyptus camaldulensis* and *Eucalyptus torelliana* possess antibacterial activities against enteric pathogens and the extracts may be a potential source of new antimicrobials against enteric organisms. *(Research Journal of Medicinal Plant 2 (1): 34-38, 2008;* ***doi:*** *10.3923/rjmp.2008.34.38)*

Antimicrobial Activity of Saponin Fraction from the Roots of *Hemidesmus indicus*

Venkatesan Gopiesh Khanna and Krishnan Kannabiran

The antimicrobial activity of saponin fraction from the roots of *Hemidesmus indicus* was evaluated against pathogenic bacteria and fungi in an *in vitro* condition by agar diffusion assay. Pure saponin extract exhibited remarkable antimicrobial activity against *Staphylococcus aureus*, *Salmonella typhi*, *Klebsiella pneumoniae*, *Aspergillus flavus*, *Aspergillus fumigatus* and *Aspergillus niger*. The present study suggests that the saponin fraction possesses significant antibacterial activity. It can be concluded from this study, saponin may

be a phytochemical of choice to develop as a potential antimicrobics against pathogenic microorganisms. *(Research Journal of Medicinal Plant 2 (1): 39-42, 2008;* ***doi:*** *10.3923/rjmp.2008.39.42)*

The Effectiveness of *Nigella sativa* Against Liver Damage in Rats

Afaf I. Abuelgasim, E.A. Omer and B. Elmahdi

The role of *Nigella sativa* (*N. sativa*) in the prevention of liver damage induced by carbon tetrachloride (CCl_4)was investigated. Twenty five Wister albino rats were allocated into 5 groups named as A, B, C, D and E. Group (A) was given paraffin oil, group (B) was given dimethylsulfoxide, group (C) was given CCl_4 to induced hepatotoxicity, group (D) and (E) were administered with CCl_4 together with 250 and 500 mg kg^{-1} body weight (b.wt.) methanolic extract of *N. sativa* which was dissolved in dimethylsulfoxide, respectively. Rats were scarified after 10 days. There was an increase in the body weights of the control groups A and B at a rate of 2%. However, the body weights in group C, D and E were reduced by 10.3, 9.3 and 10.3%, respectively. There were no significant changes in the blood picture between the control groups and the treated ones on day 10. The mean plasma ALT, AST and ALP were found to be significantly higher in both CCl_4 and *N. sativa* treated groups compared to the controls, but the increase was less in the groups which were treated with *N. sativa* methanolic extract with CCl_4. The bilibrubin concentration was raised from 0.2 to 0.7 in the group treated with CCl_4 and to 0.6 and 0.4 in those treated with 250 and 500 mg kg^{-1} b.wt. of *N. sativa* methanolic extract. The histopathological changes in the livers of the group treated with CCl_4 exhibited severe centrilobular vacuolation and congestion but in the groups treated with 250 and 500 mg kg^{-1} b.wt., these changes were to a lesser extent. *(Research Journal of Medicinal Plant 2 (1): 43-47, 2008;* ***doi:*** *10.3923/rjmp.2008.43.47)*

A Study of the Seasonal Variation in the Antimicrobial Constituents of the Leaves of *Loranthus micranthus* Sourced from *Percia americana*

P.O. Osadebe, C.A. Dieke and F.B.C. Okoye

A comparative study of the antimicrobial constituents of the leaves of *Loranthus micranthus* (parasitic on *Percia americana*) harvested at different seasons of the year, namely, January, April, July and November, was carried out. The air-dried

and pulverized leaves harvested at the stated periods were extracted with petroleum ether and the extract subjected to antimicrobial screening and phytochemical investigation. Using various solvent treatments the powdered leaves harvested in April was fractionated into four fractions, A, B, C and D; each fraction was screened for antimicrobial activity and phytochemical constituents. Phytochemical analysis of the extracts showed presence of tannins, flavonoids, alkaloids, terpenoids and saponins with some of these constituents showing variations across the seasons. Broad spectrum antibacterial activity was observed for all the extracts. However, the activity against *Bacillus subtillis* and *Salmonella kapemba* was significantly ($p<0.001$) lower for the extracts of the leaves harvested in January when compared with the extracts of the leaves harvested in the other months. Only the extracts of the leaves harvested in April showed antifungal activity. Fractions A, B and D showed antimicrobial activity comparable ($p<0.05$) to standard antibiotic, chloramphenicol. Fraction A is rich in alkaloids, B in terpenoids, A and D in tannins. The presence of alkaloids only in April and July may explain the higher antimicrobial activity observed in these months. In conclusion, mistletoe used for herbal remedy of nonspecific infections may be preferentially harvested in April and July. *(Research Journal of Medicinal Plant 2 (1): 48-52, 2008;* ***doi:*** *10.3923/rjmp.2008.48.52)*

Chemical and Pharmacological Study of *Cymbopogon proximus* Volatile Oil

Kamal E.H. El Tahir and Maged S. Abdel-Kader

The volatile oil of *Cymbopogon proximus* was prepared by hydrodistillation method and analyzed chemically by GC/MS. The chromatogram showed 8 peaks corresponding to eight components with piperitone representing 72.44% of the oil's composition. Oral and intraperitoneal (i.p.) administration of the volatile oil to male, female rats and mice resulted in LD_{50} values in the range of 1.9-2.6 mL kg^{-1} with an oral absorption of 80-90%. I.p. administration of the oil to anaesthetized rats (0.2-1.6 mL kg^{-1}) decreased the arterial blood pressure in a dose-dependent manner without significant changes in the heart rate except in the largest dose tested where a 16% decrease was observed. The induced decreases were not antagonized by atropine or mepyramine but were significantly reduced by indomethacin. The oil did not induce significant changes in the ECG. I.p. administration of the oil (1.2 mL kg^{-1}) to mice before induction of convulsions with electric shock, pentylenetetrazole, picrotoxin and strychnine resulted in complete protection only against the electrically induced convulsions. I.p. administration of the oil to pigeons in doses of 0.4 and 0.8 mL kg^{-1}

significantly protected against ouabain-induced vomiting. The results of these studies pointed to the involvement of prostaglandins in the oil-induced cardiovascular depressant effects and a probable antidopaminergic and antiglutamic-aspartic acids in the antiemetic and anticonvulsant effects, respectively. *(Research Journal of Medicinal Plant 2 (2): 53-60, 2008;* ***doi:*** *10.3923/rjmp.2008.53.60)*

Antimicrobial and Antioxidant Potentials of *Verbesina encelioides* (Cav.) Benth. and Hook. Fil ex Gray

Satish C. Jain, Renu Singh and Renuka Jain

Methanol, cold water and hot water extracts from fresh roots of *V. encelioides*, a weed, were studied for their putative antimicrobial activities against select microorganisms (Bacteria: *Bacillus subtilis, Enterobacter aerogenes, Escherichia coli*, *Pseudomonas aeruginosa* and Fungi: *Aspergillus niger*, *Candida albicans*, *Penicillium crysogenum*, *Tricophyton rubrum*) by disc diffusion method at different concentrations (2.5, 5 and 10 mg disc^{-1}) and for antioxidant potential by DPPH method. All the test extracts exhibited potential antimicrobial activity but hot water extract showed appreciable activity (IZ 23 mm) against *P. aeruginosa* and *P. crysogenum.* Hot water extract demonstrated 20.04% inhibition of DPPH at 80 μg concentration. *(Research Journal of Medicinal Plant 2 (2): 61-65, 2008;* ***doi:*** *10.3923/rjmp.2008.61.65)*

Alterations in Serum Lipid Profile of Male Rats by Oral Administration of Aqueous Extract of *Fadogia agrestis* Stem

Yakubu Musa Toyin, Akanji Musbau Adewumi and Oladiji Adenike Temidayo

The effects of repeated administration of aqueous extract of *Fadogia agrestis* (Schweinf. Ex Hiern) stem on serum lipid profile of male rats and their recovery tendencies for 10 days post-administration were investigated. Graded doses of 18, 50 and 100 mg kg^{-1} body weight of the extracts were administered orally on daily basis for 28 days. Rats were sacrificed 24 h after their daily doses of 1, 14 and 28 while those for the recovery test were sacrificed 10 days after terminating their 28 daily administration. The serum lipid profile investigated included Total Cholesterol (TC), triacylglycerol (TG), high-density lipoprotein-cholesterol (HDL-C) and low-density lipoprotein-cholesterol (LDL-C). The administration of the plant extract to the animals at all the doses produced significant increase ($p<0.05$) in the serum concentration of total cholesterol, triacylglycerols, high-density lipoprotein-cholesterol and low-density lipoprotein-cholesterol with no reversal towards their

control by the end of 10 days post-treatment. The computed atherogenic index did not portend predisposition to atherosclerosis. The results indicated alterations in the serum lipid profile of the animals but these alterations are not sufficient enough to predispose the animals to atherosclerosis. *(Research Journal of Medicinal Plant 2 (2): 66-73, 2008;* ***doi:*** *10.3923/rjmp.2008.66.73)*

Phytochemical and Antimicrobial Screening of *Indigofera conferta* GILLETT (Papilionaceae)

A.M. Musa, G. Abbas, A.B. Aliyu, M.S. Abdullahi and I.N. Akpulu

Antimicrobial activities of the crude methanol extract as well as the n-butanol and residual aqueous fractions from the aerial part of *Indigofera conferta* used in traditional medicine to treat infected wound were investigated using disc diffusion and broth dilution techniques. The extract and the fractions were tested against *Staphylococcus aureus*, *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Candida albicans* using Ampiclox as standard antibiotic. The crude methanol extract and the aqueous fraction exhibited activity against all the organisms tested (zones of inhibition 16-34 and 14-31 mm, respectively). The n-butanol fraction showed activity on *Staphylococcus aureus*, *Bacillus subtilis* and *Pseudomonas aeruginosa* only (zones of inhibition 14-25 mm). Phytochemical screening on crude extract revealed the presence of tannins, flavonoids and steroids. This study showed that the leaves of *Indigofera conferta* contains active compounds and its antimicrobial activity justifies its use in traditional medicine. *(Research Journal of Medicinal Plant 2 (2): 74-78, 2008;* ***doi:*** *10.3923/rjmp.2008.74.78)*

Cellular Effects of Garlic (*Allium sativum*) Extract on *Pseudomonas aeruginosa* and *Staphylococcus aureus*

B.E. Boboye and A.J. Alli

Effects of garlic extract at 67, 134 and 201 mg mL^{-1} on *Pseudomonas aeruginosa* and *Staphylococcus aureus* were studied. In the absence of the extract, the cells grew to high densities within 11/2 h at 37°C. Garlic extract-treated cells reduced in number and died. Percentage living cells at 201 mg mL^{-1} was 0% for both bacteria. Sucrose and $MgSO_4$ stabilized and protected the cells. At 67, 134 and 201 mg mL^{-1} of the extract in the presence of this sugar and the compound, 47, 4 and 0% of *Ps. aeruginosa* cells were viable. Microscopic examination of carbol fuschin and Giemsa stained cells showed that the garlic treated cells were bigger in size than those of untreated ones; and intact and

definite nuclei were lacking. The cell wall was the target of attack and the extract was bacteriolytic in action. *(Research Journal of Medicinal Plant 2 (2): 79-85, 2008; **doi:** 10.3923/rjmp.2008.79.85)*

Antimicrobial Activities of *Coula edulis*

Bukola C. Adebayo-Tayo and Kola K. Ajibesin

Crude ethanolic extracts of leaves, stem bark, roots and fruits of *Coula edulis* were analyzed phytochemically and evaluated for their antibacterial and antifungal activities against five clinically isolated pathogenic microorganisms namely: *Staphylococcus aureus*, *Escherichia coli*, *Salmonella typhi*, *Pseudomonas aeruginosa* and *Candida albicans*. Flavonoids, saponins, tannins, alkaloids, anthraquinones, terpenes and cardiac glycosides were detected in the ethanolic extracts of the leaves, stem bark, roots and fruits of *C. edulis*. The highest antimicrobial activity of the ethanolic extract of *C. edulis* was recorded by stem bark against *Ps. aeruginosa* and *S. aureus*. *Candida albicans* was sensitive only to the leaf and stem bark extracts of *C. edulis*. The minimum inhibitory concentration of the extracts ranged between 6.25 and 200 μg mL^{-1}. These results suggest that ethanolic extracts of the leaves, stem bark, roots and fruits can be used in the treatment of infectious diseases. The results revealed that the leaves, stem bark, roots and fruits of *C. edulis* exhibited varying degrees of antimicrobial activity. *(Research Journal of Medicinal Plant 2 (2): 86-91, 2008; **doi:** 10.3923/rjmp.2008.86.91)*

Accelerative Effect of Fenugreek Seeds on the Healing of Mandibular Fracture in Male Dromedary Camels and Monitoring of the Healing by Bone Biomarkers

F.A. Al-Sobayil

The present study was designed to determine the possible effect of fenugreek (*Trigonella foenum graecum*) seeds on acceleration of healing of mandibular fracture in male dromedary camels. The mandibular fracture healing was monitored by determining the concentrations of serum bone resorption {pyridinoline (PYD) cross-links} and formation {Bone Alkaline Phosphatase (BAP) and osteocalcin} biomarkers. Twenty adult male camels with recent bilateral mandibular fractures were used in this study. Interdental wiring technique using stainless steel wire was adopted to immobilize the fractured horizontal rami. The camels were randomly divided into two groups: Treatment group and control group. The results showed that feeding camels in the treatment group with fenugreek (100 g/camel/day for 2

weeks) accelerated mandibular fracture healing. It was concluded that serial determination of the concentrations of serum PYD, BAP and osteocalcin during mandibular fracture could be a useful tool in predicting fracture healing in male dromedary camels. *(Research Journal of Medicinal Plant 2 (2): 92-99, 2008;* ***doi:*** *10.3923/rjmp.2008.92.99)*

Dental Caries Inhibition in Albino Rats by *Breynia nivosus* Extract

E.S. Amadi, C.A. Oyeka, I. Okoli, J.I. Ihedioha and I.R. Iroha

The study investigated the caries inductive capacities of different sucrose concentrations and the anti-caries activity of *Breynia nivosus* extract in experimental albino rats. Different concentrations (70, 50, 30 and 10%) of sucrose-in-diet, were respectively fed to caries-free albino rats harboring *Streptococcus rattus* in their oral cavity, to determine their caries induction effect. Subsequently, 200 mg mL^{-1} of *Breynia nivosus* extract were intra-orally administered to the teeth surfaces of caries-free and non caries free rats to ascertain its possible caries curative and/or preventive effects. Direct observation, probing, microbial count and radiography were used to monitor the caries status of the rats. There were significant increase ($p<0.05$) in the microbial count of dental plaque of rat groups fed with 70, 50 and 30% sucrose-in-diet. However, milky white spots were only observed among the rat groups fed with 70 and 50% sucrose-in-diet at the 6th week of observation. The results of this investigation suggests that *Breynia nivosus* extract possesses some degree of *in vivo* caries preventive and curative effect on the teeth surfaces of albino rats fed simultaneously with 70% sucrose-in-diet. (*Research Journal of Medicinal Plant 3 (1): 1-8, 2009;* ***doi:*** *10.3923/rjmp.2009.1.8*)

Evaluation of the Hepatoprotective Effect of *Fumaria parviflora* and *Momordica balsamina* from Saudi Folk Medicine Against Experimentally Induced Liver Injury in Rats

Saleh I. Alqasoumi, Mohammad S. Al-Dosari, Abdulmalik M. AlSheikh and Maged S. Abdel-Kader

In a project to evaluate the efficacy of traditional Saudi plants used for liver problems the two plants *Fumaria parviflora* Lam. (Fumariaceae) and *Momordica balsamina* Linn. (Cucurbitaceae) were studied. The ethanol extract of the aerial part of *Fumaria parviflora* and the leaves of *Momordica balsamina* were subjected to hepatoprotective assays using Wistar albino rats. Liver injury

induced in rats using carbon tetrachloride. The biochemical parameters; serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), alkaline phosphatase (ALP) and total bilirubin were estimated as reflection of the liver condition. Based on the results of the biochemical parameters measurements, histopathological study was performed on the liver of rats treated with two extracts. The normal appearance of hepatocytes indicated a good protection of the extracts from carbon tetrachloride hepatotoxicity. All the results were compared with silymarin, the reference hepatoprotective drug. (*Research Journal of Medicinal Plant 3 (1): 9-15, 2009;* ***doi:*** *10.3923/rjmp.2009.9.15*)

Phytochemical and Antibacterial Studies of Root Extract of *Cochlospermum tinctorium* A. Rich. (Cochlospermaceae)

M.B. Tijjani, I.A. Bello, A.B. Aliyu, T. Olurishe, S.M. Maidawa, J.D. Habila and E.O. Balogun

Methanol extract of the root of *Cochlospermum tinctorium* was evaluated for antibacterial activities using hole-in-plate bioassay technique against *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Corynbacterium ulcerans*, *Proteus mirabilis* and *Shigella dysentriae* using ciprofloxacin (10 μg mL^{-1}) and gentamicin (10 μg mL^{-1}) as reference standards. The extract was active on all the test organisms at concentration of 2000 μg mL^{-1}. The activity of the extract against *S. dysentriae* was found to be more potent with MIC 100 and MBC 500 μg mL^{-1}. Time kill studies showed that the antibacterial activities were time dependent. Phytochemical screening revealed the presence of alkaloids, flavonoids, tannins and cardiac glycosides. These phytochemicals could be responsible for the antimicrobial activities exhibited by the extract and hence justify the ethnomedicinal uses of *C. tinctorium*. (*Research Journal of Medicinal Plant 3 (1): 16-22, 2009;* ***doi:*** *10.3923/rjmp.2009.16.22*)

Comparative Study of the Ethanolic Extracts of Four Nigerian Plants Against Some Pathogenic Microorganisms

J. Nebedum, K. Ajeigbe, E. Nwobodo, C. Uba, O. Adesanya, O. Fadare and D. Ofusori

The ethanolic extracts of *Cassia alata* (CA), Walnut-*Juglan nigra* (JN), *Ocimum basilicum* (OB) and *Aloe vera* (AV) were studied for their *in vitro* antimicrobial activity against tested pathogenic microorganisms using Agar diffusion method. Preliminary phytochemical screening showed the presence of tannin, fats

and oil, saponins and glycosides in the ethanolic extracts of all tested plants. *Juglan nigra* has the highest activity against all tested organisms *Escherichia coli*, *Staphylococcus aureus* and *Candida albican*. While the least activity against tested organism was shown by OB, ethanolic extracts of AV was the most effective against *Staphylococcus aureus*, while JN was the most effective against *Escherichia coli* and *Candida albican*. Also, the combined 600 mg mL^{-1} (concentration) of the four extracts showed a remarkable inhibitory effect on the organisms; produces over 50% of the activity of a standard antibiotic, Fulcin. Walnut-*Juglan nigra* (JN) showed the best antibacterial activity out of the four; hence this plant can be further subjected to isolation of the therapeutic antimicrobials and further pharmacological evaluation. (*Research Journal of Medicinal Plant 3 (1): 23-28, 2009;* ***doi:*** *10.3923/rjmp.2009.23.28*)

Effect of *Jatropha tanjorensis* J.l. Ellis and Soroja Leaves in Rabbits: Biochemistry and Ultrasonography

A.O. Akhigbe, M. Idu, E.S. Orhue, J.E. Ataman and S.O. Ehimwenman

Toxicological study of *Jatropha tanjorensis* leaves was conducted by evaluating changes in weight, biochemical and ultrasonographic parameters of rabbits that have been administered varying concentrations (0, 5, 10 and 25%) of the ground leaves mixed with feed-mash for a period of 30 days. There was no significant difference ($p<0.05$) in weight of rabbits. Renal function tests revealed that there was a significant reduction of serum urea concentration in the male rabbits ($p<0.05$) from 38.33 in group C to 18.33 in group D. This suggests that the amount of *J. tanjorensis* plant powder used in this study could interfere positively with the filtration function of the kidney in rabbits. The ultrasound picture of kidney, heart and spleen showed no significant change from the control, where as there was reduction in the size of the liver with increased echogenicity when compared with the control. This may be an indication of hepatic toxicity. (*Research Journal of Medicinal Plant 3 (1): 29-33, 2009;* ***doi:*** *10.3923/rjmp.2009.29.33*)

Evaluation of the Uterotonic Activity of the Aqueous Leaf Extract of *Ficus exasperata* Vahl (Moraceae)

Enitome E. Bafor, Eric K. Omogbai and Raymond I. Ozolua

The leaves of *Ficus exasperata* Vahl Enum. Pl. vahl (Moraceae) are used by traditional healers in Southern Nigeria to arrest preterm contractions in pregnant women and are also used as abortifacients in some parts of Africa. In this study

the purported uterotonic activity of the aqueous leaf extract of *F. exasperata* (AET) was investigated *in vitro*. AET was obtained from the fresh leaves of the plant. The effect of the extract on rhythmic spontaneous uterine contractions was investigated and the extract was also directly tested on uterine tissues. The effect of the extract was compared with those of acetylcholine. The extract, at concentrations ranging from 2.5×10^{-2} to 100×10^{-2} mg mL^{-1}, significantly increased the frequency ($p<0.05$) but not the amplitude of spontaneous contractions and directly stimulated uterine contractions. Acetylcholine likewise, concentration-dependently stimulated uterine contractions and significantly increased the frequency ($p<0.05$) of spontaneous contractions. The aqueous leaf extract of *F. exasperata* at the concentrations used in this study stimulates uterine contractility which may account for its use in easing childbirth in some parts of Africa. (*Research Journal of Medicinal Plant 3 (2): 34-40, 2009;* ***doi:*** *10.3923/rjmp.2009.34.40*)

Preliminary Pharmacognostical Standardisation of *Ruta graveolens* L. Aerial Parts

I. Nazish, R.A. Kaskoos, S.R. Mir, S. Amin and M. Ali

Ruta graveolens L. belonging to family Rutaceae is commonly known as Common rue and locally as Sudab in India. It is an important medicinal plant used in capillary fragility, for eye diseases, as stimulant and emmenagogue. As the herb is used widely in the Indian traditional system, it was thought worthwhile to undertake the standardization of its aerial parts. Aerial parts consist mainly of leaves that are 3-5 inch long, flowers are tetramerous and fruits are 4-5 lobed. In the powdered form it had pungent odor and exceedingly bitter taste. Microscopical examination of powder of aerial parts showed fragments of epidermis, glandular trichomes, stone cells, lignified xylem elements and abundant calcium oxalate crystals. Successive extractive value was highest in aqueous extract (16.08% on dry weight basis). Mean ash values (%) were 8.13 (total), 2.01 (acid insoluble ash) and 1.02 (water soluble ash). Loss on drying was found to be 4.03% and pH values of aqueous extract was 6.74. Bitterness value of aerial parts was 1.28; foaming index was less than 100. Screening of all extracts indicated the presence of all phytoconstituents except saponins. TLC fingerprints of extracts of aerial parts were also developed. (*Research Journal of Medicinal Plant 3 (2): 41-44, 2009;* ***doi:*** *10.3923/rjmp.2009.41.44*)

Lipid Lowering Activity of *Globimetula braunii*

J. Okpuzor, G. Kareem and C. Ejikeme

Extract *of Globimetula braunii* in different solvent systems were evaluated for possible lipid and blood pressure lowering activities using *in vivo* and *in vitro* experimental methods. Dried *Globimentula brauni* leaves were pulverized into powder and successively extracted with methanol, hexane, chloroform, ethyl acetate, n-butanol and water using hot extraction methods. Normal male adult albino rats were administered a dosage of 200 mg kg^{-1} b.wt. of the extracts for a period of 14 days and the level of total cholesterol, triacylglycerol and lipid peroxidation were monitored. The crude extract of *Globimetula braunii* was analyzed for some antihypertensive substances using High Performance Liquid Chromatography (HPLC). The results obtained, showed that different fractions of the extract caused significant ($p<0.05$) decrease in serum total cholesterol, triacylglycerol and malonyldialdehyde (MDA) levels. HPLC elution profile showed that the crude extract contained substances similar to some known antihypertensive drugs like propanalol, lisinopril, moduretic and nifidipine and the lisinopril-like compound seems to be the most abundant by having the highest concentration. Thus, the data from this study suggests that *Globimetula braunii* extract contains some biologically active substances that may lower blood pressure and serum lipids. (*Research Journal of Medicinal Plant 3 (2): 45-51, 2009;* ***doi:*** *10.3923/rjmp.2009.45.51*)

Toxicological Studies of a Nigerian Commercial Polyherbal Product in Albino Rats

E.U. Etuk, V. Igbokwe, O.P. Ajagbonna and M.O. Egua

There have been earlier reports of herbal medicine toxicity elsewhere in Nigeria, China and India. The present study examined the possible acute and subchronic toxic effects of Nasara Pile Syrup (NPS), a Nigerian commercial polyherbal medicine in albino rats. Graded doses (0.5, 1.0, 1.5 and 1.75 mL/100 g) of the herbal medicine were administered to 4 groups of albino rats and their responses observed for 72 h to study the acute toxic effect of the herbal medicine. In the subchronic toxicity study, the rats were treated orally with repeated doses of the extract for 28 days after which the animals were slaughtered and samples from the liver, kidney and heart obtained for histopathological examination. The results showed that, administration of a single dose of the herbal medicine did not produce

any harmful effect or death in the animals. But in the repeated dose treatment, the herbal medicine produced a number of deaths and damages on the kidney, liver and heart of the rats that were evidenced by histopathological lesions in a dose dependent manner. Based on the results, it was concluded that, prolong administration of NPS may cause harmful effect in the consumers, therefore, the general public should exercise caution in taking this herbal remedy and they should be aware of the impending health risk that may be associated with it. (*Research Journal of Medicinal Plant 3 (2): 52-60, 2009;* ***doi:*** *10.3923/rjmp.2009.52.60*)

Reproductive Biology and Breeding System of *Aconitum balfourii* (Benth) Muk: A High Altitude Endangered Medicinal Plant of Garhwal Himalaya, India

B.P. Nautiyal, M.C. Nautiyal, N. Rawat and A.R. Nautiyal

Aconitum balfourii (Benth) Muk an endangered medicinal herb of high altitude region was studied for reproduction biology. Controlled pollination studies were also conducted on plants grown under hothouse. Observation reveals that ravine and scree wild habitats of alpine region had better flowers and seed production. Furthermore, hot house grown plants had far more superiority over wild populations for flowers and seed production. Protandry type of dichogamy was observed and is viewed as an anti-selfing mechanism. In general, higher pollen germination was achieved comparatively at low concentrations of GA_3, IAA and IBA (1 ppm). Tube elongation was maximum upto 65 μm in IAA 1 ppm and 63 μm in IAA (5 ppm) and sucrose 5%. Dark condition along with violet color inhabits pollen germination whereas it enhances pollen tube elongation. Apomixis as well as autogamous self pollination was not observed in the species. However, fruit set differed significantly between the hand-selfed and hand-crossed treatments. Seed characteristics of open pollinated plants viz., number of seeds and seed yield per pod and plant were significantly at par than hand self pollinated flowers. Self-compatibility in the species may be a derived condition, considering that flowers are insect pollinated. The abundance and efficiency of pollinators may also affect mating patterns. The results of this study on the floral biology and breeding system of *A. balfourii* indicate reproductive potential of the species for cross-pollination, which would limit the production of selfed seeds and as such is likely to maintain sustainable levels of heterozygosity among the various populations. (*Research Journal of Medicinal Plant 3 (2): 61-68, 2009;* ***doi:*** *10.3923/rjmp.2009.61.68*)

Isolation, Characterisation and Antimicrobial Activity of a Steroidal Ester from the Leaves of *Cassia nigricans* Vahl.

R.G. Ayo, J.O. Amupitan and A.O. Oyewale

The aim of the study was to scientifically validate the claims that *C. nigricans* is used in traditional medicine for the treatment of skin diseases, infections and wounds. The leaves of *Cassia nigricans* is said to be used in traditional medicine for the treatment of peptic ulcer, gastro-intestinal disorders, diarrhoea and skin diseases. The glycoside present in the methanol extract of the leaves was hydrolysed using dilute hydrochloric acid. A silica gel column of the resulting aglycone (using petroleum ether:ethyl acetate mixtures) gave a white amorphous powder, identified as steroidal ester by means of spectral analysis. The antimicrobial activity of the steroidal ester was investigated against *Staphylococcus aureus*, *Streptococcus pyogenes*, *Corynebacterium pyogenes*, *Bacillus subtilis*, *Salmonella typhi*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Candida albicans*, *Neisseria gonorrhoeae* and *Klebsiella pneumoniae* using agar diffusion technique. The results showed that the compound was effective against all the test organisms and the minimum inhibitory concentration was found to be 2×10^3 μg mL^{-1}. (*Research Journal of Medicinal Plant 3 (2): 69-74, 2009;* ***doi:*** *10.3923/rjmp.2009.69.74*)

Evaluation of *Coleus forskohlii* Genotypes for Bio Chemical Characters

C. Kavitha, E. Vadivel and K. Rajamani

Coleus forskohlii Briq., belonging to the mint family Lamiaceae, is an important ancient root drug credited with various medicinal properties. The root extracts of *C. forskohlii* were found to contain forskolin and its therapeutic properties contributed to the emergence of *C. forskohlii* as a taxon of importance in modern medicine. Traditionally it is used for pickle making and as a condiment in India. Thirty seven *C. forskohlii* genotypes collected from various places of the important *Coleus* growing states viz., Tamil Nadu and Karnataka were evaluated for total sugars, starch and crude protein at Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore to assess its suitability for edible purpose. The genotypes exhibited remarkable variations for all the characters studied. The total sugar, starch and crude protein content in the fresh tubers varied from 5.90 to 10.03 g, 6.97 to 20.94 g and 6.14 to 9.05 g per 100 g, respectively. The genotype CF 37 excelled in the accumulation of total sugars,

starch and crude protein in tuber and thus can be utilized for medicinal as well as edible purposes. (*Research Journal of Medicinal Plant 3 (2): 75-79, 2009;* ***doi:*** *10.3923/rjmp.2009.75.79*)

Therapeutic Effect of Telfairia Occidentalis on Protein Energy Malnutrition-Induced Liver Damage

O.T. Kayode, A.A. Kayode and A.A. Odetola

Comparison was made between the efficacy of dietary protein replenishment and supplementation with *Telfairia occidentalis* leaves, in treatment of Protein Energy Malnutrition (PEM) induced liver damage. PEM rats were produced by feeding weanling rats a protein deficient diet (2% protein) for 28 days and then divided into four dietary treatment groups: 2% protein (group A; PEM control group); 20% protein and 10% *T. occidentalis* (group C); 20% protein (group D) and 10% *T. occidentalis* (group E). The protein deficient diet caused a significant increase ($p<0.01$) in hepatic malondialdehyde (MDA) level and the liver function enzymes alkaline phosphatase (ALP), alanine amino transferase (ALT) and aspartate amino transferase (AST) level in the serum. It also caused a marked reduction ($p<0.01$) in glutathione level, significant decrease ($p<0.01$) in the antioxidant enzymes superoxide dismutase (SOD) and catalase (CAT) and significant damage to the hepatocytes. Recovery diets of protein alone and protein supplemented with *T. occidentalis* had significant effects on all the parameters. The MDA level and the serum liver function enzymes were significantly reduced ($p<0.01$), glutathione and antioxidant enzymes levels were markedly increased ($p<0.01$) and a highly significant hepatocyte healing observed in the histology images. The highest recovery was however observed in group C. Results indicate the restorative ability of *T. occidentalis* in treatment of oxidative stress induced liver damage in PEM rats. (*Research Journal of Medicinal Plant 3 (3): 80-92, 2009;* ***doi:*** *10.3923/rjmp.2009.80.92*)

Effect of Drying Treatment on the Content of Antioxidants in *Enicostemma littorale* Blume

R. Sathishkumar, P.T.V. Lakshmi and A. Annamalai

The Total Phenolic Content (TPC) and antioxidant activity of fresh and dried materials of *Enicostemma littorale* Blume were evaluated using the Folin-ciocalteau method, 2, 2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity and Ferric Reducing Antioxidant Power (FRAP) assays. Different drying

treatments especially, microwave treated plant material led to significant reduction ($p \leq 0.05$) in antioxidant properties of *E. littorale* in methanolic extracts as compared to that of the boiling water extracts, which appeared to exhibit significantly stronger antioxidant potentials ($p \leq 0.05$) even in dried plant materials due to greater solubility of compounds, breakdown of cellular constituents as well as hydrolysis of tannins. A strong free radical scavenging activity in the chosen plant material suggests that it has great potential in the food industry as functional food ingredient. (*Research Journal of Medicinal Plant 3 (3): 93-101, 2009;* ***doi:*** *10.3923/rjmp.2009.93.101*)

Anti-Ulcerogenic Activity of Two Extracts of *Parquetina nigrescens* and their Effects on Mucosal Antioxidants Defence System on Ethanol-Induced Ulcer in Rats

A.A.A. Kayode, O.T. Kayode and A.A. Odetola

The effect of two extracts of *Parquetina nigrescens* on mucosal antioxidants defense system in ethanol-induced ulcer in rats was studied. Activities of superoxide dismutase (SOD), catalase (CAT) and levels of reduced glutathione (GSH) were determined in the gastric mucosa and liver of normal and experimental groups of rats. The rats were pretreated with 500 and 1000 mg kg^{-1} of hexane and chloroform extracts of *P. nigrescens*, respectively dissolved in olive oil for a period of 14 days prior to ethanol induction. It was found that prior to ulcer induction, 14 days pretreatment with hexane and chloroform extract *P. nigrescenes* significantly reduced ethanol-induced gastric damage. The levels of GSH and activities of the antioxidants enzymes (SOD and CAT) were depressed significantly ($p<0.05$) in the ulcerated rats when compared with that of normal control. The activity of SOD was lower significantly ($p<0.05$) in the ulcerated mucosa and liver of the experimental rats when compared to the normal control group. There was a significant increase ($p<0.05$) in the level of CAT in the groups pretreated with the extracts compared to the ethanol group. A similar result was observed for GSH. Pretreatment with hexane extract caused 75.43 and 74.55% elevations in the activities of SOD in the mucosa and liver homogenate, respectively. Similar elevations were observed in the group pretreated with the chloroform extract. The cimetidine group also caused 69.79 and 69.67% elevation in the SOD activity in the mucosa and liver homogenate, respectively. The pretreatment with *P. nigrescens* was found to exact a significant gastro protective and antiulcer effect partly by protecting against the ethanol-induced ulcerogenic effects in experimental rats and probably through the induction of antioxidant enzymes. (*Research Journal of Medicinal Plant 3 (3): 102-108, 2009;* ***doi:*** *10.3923/rjmp.2009.102.108*)

Effects of *Piper sarmentosum* (Kaduk) Water Extract on Adiponectin and Blood Glucose Levels in Ovariectomy-Induced Obese Rats

A. Aida Azlina, S. Farihah, M.S. Qodriyah and M.F. Nur Azlina

This study was conducted to evaluate the effects of *Piper sarmentosum* (PS) extract and glycyrrhizic acid (GCA) on plasma adiponectin and blood glucose in ovariectomy-induced obese rats. Twenty eight female Sprague-Dawley rats were randomly divided into four groups. Three groups were ovariectomized (OVX), while the remaining group underwent sham operation. The OVX groups were given PS water extract (0.125 g kg^{-1}), GCA (0.120 g kg^{-1}) and water (CTRL), respectively, while the Sham-Operated (SHM) group received only water. Plasma adiponectin and blood glucose were measured at zero, three and five months of treatment, while body weight was measured weekly. All the OVX groups had a significant reduction ($p<0.05$) in the plasma adiponectin compared to the SHM group. After three and five months of treatment, both PS and GCA treated group showed a significant increment ($p<0.05$) in the plasma adiponectin level compared to CTRL group. While, the blood glucose level, only PS treated group showed significant reduction ($p<0.05$) after three and five months of treatment compared to CTRL group but no significant difference ($p<0.05$) occurred in body weight compared to CTRL group. Our finding suggests that water extract of *Piper sarmentosum* may have the ability to reduce the amount of visceral fat in the body as shown by the increment of plasma adiponectin and improve blood glucose levels in obese rats. (*Research Journal of Medicinal Plant 3 (3): 109-115, 2009;* ***doi:*** *10.3923/rjmp.2009.109.115*)

Time-kill Curve Studies of Ampucare Against *Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae* and *Proteus vulgaris*

S.M. Shrivastava, S. Kumar and M. Chaudhary

Present study attempts to determine antimicrobial efficacy of Ampucare stored at different conditions by time kill curve studies against *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae* and *Proteus vulgaris*. In all storage conditions, a rapid killing time was achieved by Ampucare. Bacterial count was less than 3 Log_{10} cfu mL^{-1} after 6 h of study in all organisms under study. No deviation in pattern of bacterial inhibition was found in all conditions of storage of Ampucare. There was no re growth reported even after exposure for longer time

under influence of Ampucare. In conclusion, Ampucare has good antimicrobial activity under all storage conditions of study against *E. coli*, *S. aureus*, *P. vulgaris* and *K. pneumoniae*. (*Research Journal of Medicinal Plant 3 (3): 116-122, 2009;* ***doi:*** *10.3923/rjmp.2009.116.122*)

Therapeutic Potential of *Citrus medica* L. Peel Extract in Carrageenan Induced Inflammatory Pain in Rat

S. Sood, S. Bansal, A. Muthuraman, N.S. Gill and M. Bali

In this study, we planned to evaluate the antioxidative, anti-inflammatory and analgesic potential of *Citrus medica* peel extract. Antioxidant activity in different solvent systems was evaluated. Ethyl acetate extract of *Citrus medica* peel (EtCM) showed maximum 1,1-diphenyl-2-picrylhydrazyl (DPPH) and hydrogen peroxide radical scavenging activity in a dose dependent manner as compared to ascorbic acid. Further, anti-inflammatory and analgesic activities of EtCM (200, 300 and 400 mg kg^{-1}) were studied on carrageenan induced inflammatory pain in rats. Anti-inflammatory activity was assessed by measuring paw volume in rats. Analgesic activity was evaluated for its central and peripheral pharmacological actions by using hot plate, plantar, pin prick and mechanical allodynia tests in rats. EtCM (400 mg kg^{-1}) produced significant decrease in paw volume and pain as compared to diclofenac. Therefore, the *Citrus medica* peel extract may be used as a future antioxidant for the treatment of inflammation and pain. (*Research Journal of Medicinal Plant 3 (4): 123-133, 2009;* ***doi:*** *10.3923/rjmp.2009.123.133*)

Biological Activity of *Merremia emarginata* Crude Extracts in Different Solvents

A.V. Babu, R.S.C. Rao, K.G. Kumar, B.H. Babu and P.V.V. Satyanarayana

The plant *Merremia emarginata* (Burm. f.) Hallier f., belongs to Convolvulaceae family. In traditional medicinal system, different parts of *M. emarginata* have been mentioned to be therapeutically used as deobstruent, diuretic, for cough, headache, neuralgia and rheumatism. In the present study, biological activities of different solvent extracts isolated from *M. emarginata* were tested. Hexane (IA), ethyl acetate (IB), methanol (IC) and aqueous methanol (25%) (ID) extracts of *M. emarginata* were examined. Antioxidant properties of the extracts were studied by DPPH (1,1-Diphenyl-2-Picrylhydrozyl) radical scavenging activity method and superoxide radical scavenging activity method. Methanol

extract exhibited better antioxidant activity than other extracts with IC_{50} of 8.59 μg mL^{-1} in DPPH radical scavenging method. Methanol and hexane extracts exhibited α-amylase inhibitory activity with IC_{50} of 104.5 and 133.4 μg mL^{-1}, respectively. Ethyl acetate extract showed cytotoxicity with ED_{50} of 34.29 μg mL^{-1} in brine shrimp lethality assay. The present study revealed that the extracts IB and IC of *M. emarginata* were found to be showed promising biological activities. Methanol extract of this plant might be use full for antioxidant and antiobesity activities with minimal toxicity. (*Research Journal of Medicinal Plant 3 (4): 134-140, 2009;* ***doi:*** *10.3923/rjmp.2009.134.140*)

Effects of *Croton pendliflous* Methanolic Extract on Intestinal Enzymes and Protein Content in Pregnant Rats

T.O. Oyesola, F.S. Oluwole and O.A. Oyesola

The seeds of *Croton penduliflorus* (Family Euphorbiaccea) are often used as a purgative. The physiological effects of the methanolic extract on some intestinal disaccharide splitting enzymes were investigated in pregnant rats using an *in vivo* study. The extract was administered orally at a dose of 550 mg kg^{-1} body weight during the three phases of pregnancy. The extract caused a significant increase in maltase activity in the three phases of pregnancy, a significant increase in total protein concentration in early and late pregnancy and a significant increase in albumin concentration in early and mid pregnancy ($p<0.01$). The extract also caused a significant increase in sucrase activity in early pregnancy and in lactase activity in mid pregnancy. The present data suggest that increase activity of disaccharidase brush border enzymes most especially sucrase show that the extract might be having hyperplastic (growth) effect on the small intestinal enzyme activities, there is possibility of increased nutrients to the pregnant rats and fetuses. (*Research Journal of Medicinal Plant 3 (4): 141-145, 2009;* ***doi:*** *10.3923/rjmp.2009.141.145*)

Chemical Composition of Fixed Oil of *Olea europaea* Drupes from Iraq

R.A. Kaskoos, S. Amin, M. Ali and S.R. Mir

The present study was aimed to describe the fatty acid composition, stability and nutritional characteristics of fixed oil of *Olea europaea* drupes from Iraq, locally known as *Zaytoon*. The oil is commonly known as olive oil and is used throughout the world and is believed to have an important role in human health and nutrition.

It is considered as one among newer source of edible oil. The oil is classified as generally regarded as safe (GRAS). The fact that there are few reports of analysis of olive oil from Iraq in comparison to other parts of the world also lured us to examine chemically. Fatty acid composition of the olive oil was determined by capillary GC-FID. Thirty fatty acids (95.88%) were identified in the oil. The major fatty acids of the oil were oleic acid (68.07±1.089%), palmitic acid (12.12±0.162%), arachidic acid (9.78±0.155%), docosahexaenoic acid DHA (2.65±0.041%) and eicosapentaenoic acid EPA (0.53±0.01). The DHA and EPA are highly valued polyunsaturated fatty acid (PUFA) and part of several health foods and nutraceuticals. Peroxidizability index calculated for the oil was 27.37% and unsaturated/saturated ratio was 3.25. High unsaturated fatty acid content signified its potential as a health promoter. Moreover, it can be expected to offer considerable resistance to oxidative rancidity during storage. (*Research Journal of Medicinal Plant 3 (4): 146-150, 2009;* ***doi:*** *10.3923/rjmp.2009.146.150*)