Antihyperglycemic and hypolipidemic activities of *Setaria italica* seeds in STZ diabetic rats

*Setaria italica* is commonly known as Foxtail millet. In India it is chiefly cultivated in Andhra Pradesh and Tamilnadu. It can be eaten as a sweet or savory food in all ways that rice is used. Due to the presence of high fiber content, it is suggested as a food for diabetic patients in India. To evaluate the antihyperglycemic and hypolipidemic potential of *S. italica* seeds in streptozotocin induced diabetic rats.

Anti hyperglycemic activity of different doses of *S. italica* seed aqueous extract (SISAE) was evaluated by oral administration of SISAE in streptozotocin induced diabetic rats and it was compared with that of Glibeclamide, a standard oral hypoglycemic agent. The effect of long-term treatment with 300 mg of SISAE/kg, b.w./day on blood glucose, glycemic control and serum lipids was evaluated in normal and diabetic rats. Results: The dose of 300 mg of SISAE/kg b.w. produced a significant fall (70%) in blood glucose in diabetic rats after 6 h of administration of the extract. None of the doses of the SISAE could produce any change in blood glucose levels of normal rats. After 30 days of treatment with 300 mg of SISAE/kg b.w./day there was a significant decrease in fasting blood glucose associated with a significant improvement in glycemic control as evidenced by lower levels of HbA1c in diabetic treated rats when compared to those in untreated diabetic rats The aqueous extract also exhibited significant hypolipidemic effect which is evident from lower levels of triglycerides, total, LDL and VLDL cholesterol and increase in the levels of HDL cholesterol in diabetic treated rats compared to those in diabetic untreated rats. The antihyperglycemic and hypolipidemic activities of the aqueous extract could be due to the presence of alkaloids or glycosides as active principles. Conclusion: These findings demonstrate that the aqueous extract of *S. italica* seeds have excellent antihyperglycemic and hypolipidemic activities and thus have great potential as a source for natural health products [Sireesha, Y., Kasetti, R.B., Nabi, S.A., Swapna, S. and Apparao, C.* (Department of Biochemistry, Sri Venkateswara

NPARR 3(1), 2012-084, An ethnomedicinal, phytochemical and pharmacological profile of *Desmodium gangeticum* (Linn.) DC. and *Desmodium adscendens* (Sw.) DC

*Desmodium gangeticum* (L.) DC. and *Desmodium adscendens* (Sw.) DC. are two important and well explored species of genus Desmodium (Fabaceae (alt. Leguminosae) subfamily: Faboideae). *Desmodium gangeticum* is used as a tonic, febrifuge, digestive, anticatarrhal, antiemetic, in inflammatory
conditions of chest and in various other inflammatory conditions in the Ayurvedic System of Medicine while *Desmodium adscendens* is widely used for the treatment of asthma in Ghana, Africa. Aim of the review: The aim of this review is to provide comprehensive information on the botany, traditional uses, phytochemistry, pharmacological research and toxicology of *Desmodium gangeticum* and *Desmodium adscendens* to explore their therapeutic potential and future research opportunities. All the available information on *Desmodium gangeticum* and *Desmodium adscendens* was collected via electronic search (using Pubmed, SciFinder, Scirus, Google Scholar, JCCC@INSTIRC and Web of Science) and a library search for articles published in peer-reviewed journals. About 25 different species of Desmodium including *Desmodium gangeticum* and *Desmodium adscendens* are used ethnomedicinally all over the world. Phytochemical research on *Desmodium gangeticum* and *Desmodium adscendens* has led to the isolation of alkaloids, pterocarpan, phospholipids, sterols, flavones and flavonoid glycosides from *Desmodium gangeticum* and triterpenoid saponins, phenylethyamines and indole-3-alkyl amines from *Desmodium adscendens*. Crude extracts, fractions and isolated components of *Desmodium gangeticum* and *Desmodium adscendens* showed a wide spectrum of in vitro and in vivo pharmacological activities like antileishmanial, immunomodulatory, antiasthmatic, smooth muscle relaxant, anti-inflammatory, anti-ulcer, cardio-protective, antiabiotic, antiamoiesis, antiviral, antioxidant and hepatoprotective activities. *Desmodium gangeticum* and *Desmodium adscendens* have emerged as a good source of traditional medicine. *Desmodium gangeticum* possesses the ability to scavenge the free radicals generated during ischaemia and ischaemia reperfusion thereby preserving the mitochondrial respiratory enzymes that eventually lead to cardio-protection and has potential prophylactic and therapeutic efficacy against Leishmania infection. *Desmodium adscendens* is useful against chronic bronchitis and asthma. However, there is a need to search for individual secondary metabolites responsible for these actions and study their mode of actions, bioavailability, pharmacokinetics and physiological pathways in sufficient detail. The promising results should be further substantiated by clinical trials [Rastogi, S. *, Pandey, M.M., Rawat, A.K.S (Pharmacognosy and Ethnopharmacology Division, National Botanical Research Institute, Rana Pratap Marg, Lucknow 226 001, India), *Journal of Ethnopharmacology*, 2011, 136(2), 283-296].

*NPARR* 3(1), 2012-085, *Cynodon dactylon* (L.) Pers.: A valuable medicinal plant

*Cynodon dactylon* (L.) Pers. is a perennial grass. The plant is a rich source of metabolites such as proteins, carbohydrates, mineral constituents, P-sitosterol, flavonoids, alkaloids, glycosides and triterpenoids. The plant has been long used in the traditional medicines to treat various ailments such as anasarca, cancer, convulsions, cough, cramps, diarrhea, dropsy, dysentery, epilepsy, headache, hemorrhage, hypertension, hysteria, measles, rubella, snakebite, sores, stones, tumors, urogenital disorders, warts and wounds. The plant shows biological activities such as antiviral and antimicrobial properties. This study provides a comprehensive detail of the pharmacognostical characteristics, biological effects and medicinal uses of *Cynodon dactylon*. A review of some important patents on *Cynodon dactylon* is presented [Nagori, B.P. and Solanki, R. * (Lachoo Memorial College of Sciences and Technology, Pharmacy Wing, Shastri Nagar, Jodhpur-342003, Rajasthan, India), *Research Journal of Medicinal Plant*, 2011, 5(5), 508-514].

*NPARR* 3(1), 2012-086, Evaluation of phytochemical, antimicrobial and GC-MS analysis of extracts of *Indigofera trita* L.f. spp. *subulata* (Vahl ex Poir)

*Indigofera trita* L.f. spp. *subulata* (Vahl ex Poir) distributed in the southern part of India particularly in Tamilnadu and it has potential medicinal properties and used in the treatment of tumours and liver disorders. The work carried out in the plant is much less, the present work was designed to investigate the preliminary phytochemical, antibacterial and GCMS analysis of various parts of the plant. The medicinally compounds from crude extracts of leaf, stem and root portions were fractionated in different solvents (aqueous, chloroform, petroleum ether and ethanol) subjected to preliminary phytochemical and antibacterial activities. The potential extracts were analysed through FTIR and GCMS. Phytochemical screening of leaves, stem and root extracts of
Indigofera subulata revealed the presence of alkaloids, Quinones, reducing sugars, saponins, terpenoids and tannins. The ethanol extract of leaves and stem was found to exhibit activity against Pseudomonas aeruginosa. Fourteen compounds were identified by GC-MS analysis. Phytomedicines avenues for the identification of medicinally significant compounds with potential activity [Vinoth, S., Rajesh Kanna, P., Gurusaravanan, P., Jayabalan, N. (Department of Plant Biotechnology, Bharathidasan University, Tiruchirappalli-620 024, Tamilnadu, India), International Journal of Agricultural Research, 2011, 6(4), 358-367].

NPARR 3(1), 2012-087, In vivo hepatoprotective effect of Trianthema decandra extracts on carbon tetrachloride induced rats

In the present investigation, an attempt has been made to test the hepatoprotective efficacy of the herbal plant, Trianthema decandra on carbon tetrachloride induced toxic hepatitis. The carbon tetrachloride induced rats showed higher level of total protein (TP), total cholesterol (TC), triglycerides (TG), Alkaline Phosphatase (ALP), Aspartate Transaminase (AST), Alanine Transaminase (ALT) and bilirubin in serum. The leaf extract of T. decandra was treated with hepatitis rats showed remarkable reduction in the activity of TP, TC, TG, ALP, AST, ALT and bilirubin when compared to the normal rats. This research is suggests that the crude extract of T. decandra could be control the carbon tetrachloride induce hepatitis [Priya, G. and C. Chellaram, C. (Department of Biomedical Engineering, Vel Tech Multi Tech Dr. Rangarajan Dr. Sakunthala Engineering College, Chennai, Tamilnadu, India), Journal of Chemical and Pharmaceutical Research, 2011, 3(3), 154-158].

NPARR 3(1), 2012-088, Determination of antibacterial, antioxidant and cytotoxicity effect of Indigofera tinctoria on lung cancer cell line NCI-H69

The present study has been under taken with an objective to determine the antibacterial, antioxidant and cytotoxic activity of the leaf extract Indigofera tinctoria. The selected medicinal plant was collected from near by region of Coimbatore. Antibacterial activity was carried against gram positive and gram negative bacteria. Antioxidant property was determined both quantitatively and qualitatively. Determination of cytotoxic activity of leaf extract was carried out on lung cancer cell line. The compound present in the extract were identified by GC-MS analysis. The extract screened for photochemical analysis was found to contain bioactive compounds like flavonoids, saponins, tannins, steroidal terpenes, phenols and anthroquinone. The leaf extract had shown the ability to inhibit the growth of gram positive bacteria namely Bacillus pumilus, Staphylococcus aureus and Streptococcus pyogenes and zone of inhibition of 16 and 17 mm, respectively but not shown growth of inhibition on gram negative bacteria Escherichia coli and Pseudomonas aeruginosa. Strong antioxidant activity was observed both qualitatively and quantitatively. The strong antioxidant was observed at 250 µg mL⁻¹ with an IC₅₀ value of 51.66 which is higher than that of standard ascorbic acid. The cytotoxic effect of leaf extract on lung cancer cell line NCI-H69 was studied. The percentage cell viability of cells was found to decrease at increasing concentration. GC-MS analysis of the leaf extract shows 6 compounds. This study suggests that ethanol extract of Indigofera tinctoria have profound antibacterial, antioxidant and cytotoxic effect [Renukadevi, K.P., Suhani Sultana, S* (School of Biotechnology, Dr. G.R. Damodaran College of Science, Coimbatore-641014, India), International Journal of Pharmacology, 2011, 7(3), 356-362].

NPARR 3(1), 2012-089, Anti-diabetic effects of aqueous ethanolic extract of Hibiscus rosasinensis L. on streptozotocin-induced diabetic rats and the possible morphologic changes in the liver and kidney

Medicinal plants play a major role in the management of Diabetes mellitus especially in developing countries. The present study investigated the possible therapeutic effects of Hibiscus rosasinensis (H. rosasinensis) extract on certain biochemical markers in Streptozotocin (STZ)-induced diabetes mellitus in rats. The effects of an aqueous ethanolic extract of H. rosasinensis Aerial part on blood glucose, albumin, albumin/globulin ratio, urea, insulin, C-peptide, uric acid and creatinine and the activities of diagnostic marker enzymes aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase and gamma-glutamyl transpeptidase
were examined in the plasma, liver and kidney tissues of control and experimental groups. Oral administration of *H. rosasinensis* (500 mg kg\(^{-1}\)) aqueous extract to diabetic rats for 4 weeks significantly reduced blood glucose, urea, uric acid and creatinine but increased the activities of insulin, C-peptide, albumin, albumin/globulin ratio and restored all marker enzymes to near control levels. The present results shown that *H. rosasinensis* extract has an antihyperglycaemic effect and consequently may alleviate liver and renal damage associated with STZ-induced diabetes mellitus in rats [Mandade, R. and Sreenivas, S.A.* (Guru Nanak Institute of Pharmacy, Ibrahimpattnam, Hyderabad, India), *International Journal of Pharmacology*, 2011, 7(3), 363-369].

NPARR 3(1), 2012-090, Antidiarrhoeal activity of *Dichrostachys cinerea* (L.) Wight & Arn

*Dichrostachys cinerea* (L.) Wight & Arn belongs to Mimosaceae, is commonly known as 'Vidathalai' in Tamil. Earlier folklore claims reveals that the plant is used in diarrhoea and dysentery. The whole plant has been used for antidiarrhoeal activity in Indian traditional medicine. So the leaf, stem bark and root of the plant were screened separately for their antidiarrhoeal activity by castor oil induced model and small intestinal transit model. In the present study vacuum dried ethanolic extract of leaf, bark and root of the plant were used at two dose level (200 mg / kg and 400 mg / kg p.o). All the extracts showed significant antidiarrhoeal activity by both the tested models. Hence the present study supports the traditional claim of *Dichrostachys cinerea* (L.) Wight & Arn as an antidiarrhoeal drug in the Indian System of Medicine [Jayakumari, S. *, Srinivasa Rao, G.H., Anbu, J., Ravichandiran, V. (Department of Pharmacognosy, Old Pallavaram, School of Pharmaceutical Sciences, Vels University, Old Pallavaram, Chennai, Tamilnadu, India), *International Journal of Pharmacy and Pharmaceutical Sciences*, 2011, 3(3), 61-63].

NPARR 3(1), 2012-091, Phytochemical screening, antibacterial activity and physicochemical evaluation of leaves of *Butea monosperma*

The purpose of present work is to study medicinally active substances present in solvent-extracts obtained from leaves of *Butea monosperma*. The active substances were isolated by Soxhlet extractor and identified by phytochemical test. The Soxhlet extraction of leaves, in powdered form, was performed using petroleum ether and followed by chloroform and methanol. The results of analyses of each extract confirm the active substance were sterols, triterpenes, glycosides flavonoids and proteins. The evaluation of leaves powder was supported by physico-chemical analysis. The microbial tests of isolated substances were performed with microorganisms like *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subialis*, *Staphylococcus aureus*, *Proteus vulgaris* and *Klebsiella pneumonia*. The observation of microbial test of methanol-extract supports to antibacterial activity to the greater extent than petroleum ether and chloroform-extract [Rajput, A., Pal, S.C. and Patil, B.* (G.M.C.Polytechnic, Shahada, Dist Nandurbar, Maharashtra-425409, India), *International Journal of Pharmacy and Pharmaceutical Sciences*, 2011, 3(3), 189-191].

NPARR 3(1), 2012-092, Antimicrobial activity of *Coccinia grandis* against biofilm and ESBL producing uropathogenic *E. coli*

Uropathogenic organisms have evolved numerous defense mechanisms against antimicrobial agents, hence resistance to old and newly available drugs are increasing at an unprecedented level. The events of antibiotic resistance have lead for screening of several medicinal plants for their potential antimicrobial activity. The aim of this study was to evaluate the antimicrobial efficacy of *Coccinia grandis* against biofilm and Extended Spectrum of Beta Lactamase (ESBL) producing Uropathogenic *Escherichia coli* (UPEC). *C. grandis* is a widespread medicinal plant traditionally used in India to treat infectious diseases. Aqueous, acetone and ethanol extracts of leaves of *C. grandis* were tested for antimicrobial activity in vitro by the agar well diffusion method. Ethanol extract of leaves exhibited antimicrobial activity against biofilm producing strains UPEC 17 and 82, whereas the aqueous and acetone extracts showed antibacterial activity only against UPEC 57. Ethanol extract of leaves exhibited inhibitory action against ESBL producing UPEC 87 and 96, whereas the aqueous extract inhibited the growth of only UPEC 85. Similarly, the acetone extract inhibited the growth of UPEC 42 and 96.
These antimicrobial properties seem to be related to the presence of tannin, alkaloids and tri-terpenoids in C. grandis. It can be concluded that C. grandis can be used to discover natural products that may serve as lead for the development of new pharmaceuticals, addressing the major therapeutic needs especially for biofilm and ESBL producing uropathogenic strains [Poovendran, P., Vidhya, N., Murugan, S * Department of Microbiology, Dr. N. G.P Arts and Science College, Coimbatore-641 048, Tamil Nadu, India], *Global Journal of Pharmacology*, 2011, 5(1), 23-26].

**NPARR** 3(1), 2012-093, **A detailed study on the antioxidant activity of the stem bark of* Dalbergia sissoo* Roxb., an Indian medicinal plant**

A detailed study was performed on the antioxidant activity of the aqueous and methanol extracts (AED and MED respectively) of the stem bark of the plant, *Dalbergia sissoo* Roxb. (Fam. Fabaceae), also known as Indian Rosewood. The antioxidant activity of the extracts was measured by in vitro chemical analyses involving the assays of (1) 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity (2) ferric ion reducing power (3) ferrous ion chelating activity and (4) Au nanoparticle formation potential. A simplified method was developed based on Au nanoparticles formation to assess the antioxidant activity of any plant extract, and was used for the first time to assay the antioxidant activity of AED and MED. In all the assays, AED showed significantly greater activity over MED. This work provides a scientific support for the high antioxidant activity of this plant and thus it may find potential applications in the treatment of the diseases caused by ROS [Roy, N., Laskar, R.A., SK, I., Kumari, D., Ghosh, T., Begum, N.A*(Bio-Organic Chemistry Lab, Department of Chemistry, Visva-Bharati University, Santiniketan 731 235, India), *Food Chemistry*, 2011, 126(3), 1115-1121].