The barks of *Acacia leucophloea* (Fabaceae) are used in Pakistan traditional medicine as an astringent, a bitter, a thermogenic, a styptic, a preventive of infections, an anthelmintic, a vulnerary, a demulcent, an expectorant, an antipyretic, an antidote for snake bites and in the treatment of bronchitis, cough, vomiting, wounds, ulcers, diarrhea, dysentery, internal and external hemorrhages, dental caries, stomatitis, and intermittent fevers and skin diseases. A study was carried out for the possible elucidation of mechanisms justifying the traditional medicinal uses of *A. leucophloea* (Fabaceae) in gastrointestinal and respiratory diseases. *In vitro* experiments were carried out over isolated rabbit jejunum and guinea-pig ileum in order to determine spasmolytic and bronchorelaxant activities, while *in vivo* studies were conducted in mice for antidiarrheal properties.

A methanol crude extract of barks of the plant caused a concentration-dependent relaxation (0.1-3 mg/ml) of isolated rabbit jejunum preparations in a pattern similar to that of nifedipine and dicyclomine, suggesting a Ca\(^{2+}\) channel-blocking mechanism in addition to an anticholinergic effect. In guinea-pig ileum the extract caused a parallel shift in the Ach-curves without suppression of maximum contractile response, followed by a non-parallel shift with the suppression of maximum contractile response at higher concentration similar to that caused by dicyclomine. Moreover, in rabbit trachea, it also caused the relaxation of carbachol (1μM) and high K\(^{+}\)-induced contractions at a dose ranging between 0.1578 and 0.734 mg/ml and 0.46-0.94 mg/ml, respectively. These findings indicate that the extract possesses spasmylytic and bronchodilator activities, mediated possibly through blockade of Ca\(^{2+}\) channels, thus justifying its medicinal use in diarrhoea and asthma. *Acacia leucophloea* methanol extract exhibited dose-dependent (100-500 mg/ml) protective effect against castor oil induced diarrhoea.

The data obtained contribute to the validation of the traditional use of *Acacia leucophloea* bark in treating gastrointestinal and respiratory disorders, providing an hypothesis on the possible mechanisms of action [Imran Imran, Liaqat Hussain, M. Zia-Ul-Haq, Khalid Hussain Janbaz, Anwar H. Gilani, Vincenzo De Feo* (Dipartimento di Scienze Farmaceutiche e Biomediche, Università degli Studi di Salerno, Via Ponte don Melillo, 84084 Fisciano, Salerno, Italy), *Journal of Ethnopharmacology*, 2012, 138(3), 676-682].

**NPARR 3(2), 2012-0201, Antiarthritic activity of various extracts of *Mesua ferrea* Linn. seed**

*Mesua ferrea* Linn. (Clusiaceae), Cobra's saffron, is named after the heaviness of its timber and is cultivated in tropical climates for its form, foliage, and fragrant flowers. It is prescribed in the Ayurvedic literature for the treatment of pain, inflammation, and rheumatic conditions. In present investigation, activity of *Mesua ferrea* and its evaluation in the formaldehyde and Complete Freund's Adjuvant (CFA)-induced arthritis in rats is reported. The extracts obtained from successive extraction were subjected to preliminary phytochemical investigation and antiarthritic activity was evaluated by inducing formaldehyde and CFA. Body weight changes and haematological parameters were measured.

The results indicate that *Mesua ferrea* protects rats against formaldehyde and CFA induced arthritis. The body weight changes and haematological perturbations induced by CFA were maintained. The overall results indicated that *Mesua ferrea* exerts a potent protective effect
against formaldehyde and adjuvant-induced arthritis in rats. These findings demonstrate that the present study validates the ethnomedicinal use of seeds of *Mesua ferrea* in the treatment of arthritis conditions [Sunil S. Jalalpure*, Yuvaraj D. Mandavkar, Pallavi R. Khalure, Gulab S. Shinde, Pournima A. Shelar and Amol S. Shah (SVERI’s College of Pharmacy, Pandharpur, Maharashtra, India), *Journal of Ethnopharmacology*, 2011, **138**(3), 700-704].


To investigate the anti-inflammatory and anti-nociceptive activities of the crude ethanolic extract of *Adiantum capillus-veneris* Linn. (Adiantaceae) and its various fractions. The ethanolic extract and its fractions were given at a dose of 200mg/kg po and 300mg/kg po for testing their anti-inflammatory activity by carrageenan induced hind paw edema. The analgesic activity of the ethanolic extract and its fractions has been carried out by tail-flick method and writhing test at a dosage of 300mg/kg po. Gastric ulceration studies have been further carried out to study the antulcer effect of the ethanolic extract and its various fractions at dose of 900mg/kg body weight.

Amongst the tested fractions, the ethyl acetate fraction exhibited better inhibition (67.27%) at 300 mg/kg po dosage when compared to the standard drug Indomethacin (63.63%) after 3h in the carrageenan induced hind paw edema. The anti-inflammatory activity of the ethanolic extract and its various fractions appear to be related to the inhibition of NO release, and the decreasing TNF-α level. The ethanolic extract and all its fractions especially the ethyl acetate (*p*<0.01) showed significant analgesic activity with insignificant ulceration as compared to the standard drug, i.e. ibuprofen. The histopathological study of ethanolic extract and its fractions reveals that none of them cause ulcer. The present study indicates that *Adiantum capillus veneris* Linn. has significant anti-inflammatory and analgesic effect [Saqlain Haider, Syed Nazreen, Mohammad Mahboob Alam, Amit Gupta, Hinna Hamid and Mohammad Sarwar Alam*(Department of Chemistry, Faculty of Science, Jamia Hamdard, Hamdard University, New Delhi 110 062, India), *Journal of Ethnopharmacology*, 2011, **138**(3), 741-747].

NPARR 3(2), 2012-0203, *Evaluation of antihyperglycemic activity of *Cocos nucifera* Linn. on streptozotocin induced type 2 diabetic rats*

The plant *Cocos nucifera* Linn. (Areaceae) is commonly known as coconut. Traditionally the juice of the young spadix when fresh is used in diarrhea and diabetes. The objective of the present study was to investigate the effect of antidiabetic activity and effect on lipid profile as well as cardioprotective effect of hydro-methanol extract of *Cocos nucifera* (HECN) on streptozotocin (STZ)-induced diabetic rats. After 72 h of STZ (50 mg/kg, b.w. i.p.) administration, animals showing plasma sugar level more than 250 mg/dl were considered as diabetic rat. Fasting blood glucose (FBG) levels were measured on 0th (after 72 h of STZ), 5th, 10th, and 15th day. On the 15th day all the animals were sacrificed and the serum biochemical parameters and antioxidant enzyme status were measured.

HECN treated animals showed a significant reduction in FBG level as compared with diabetic control group. Serum enzyme level (SGOT, SGPT, SALP), lipid peroxidation and antioxidant enzyme level such as CAT, GSH, SOD and cholesterol and triglycerides in the HECN treated groups were restored towards normal level as compared to diabetic control
groups and the values were comparable with the standard groups (glibenclamide). Improvement in the FBG and the restoration of all other biomarker as well as enzymes indicates that HECN has very good anti-diabetic activity with very low side effects and provides a scientific rationale for the use as an anti-diabetic agent [Sagar Naskar*, Upal K. Mazumder, Goutam Pramanik, Malaya Gupta, R.B. Suresh Kumar, Asis Bala and Aminul Islam (Department of Pharmaceutical Technology, Jadavpur University, Kolkata, India), *Journal of Ethnopharmacology*, 2011, **138**(3), 769-773].

NPARR 3(2), 2012-0204, Kuguacin J isolated from *Momordica charantia* leaves inhibits P-glycoprotein (ABCBI)-mediated multidrug resistance

Multidrug resistance (MDR) is a major factor in the failure of chemotherapy in cancer patients. Resistance to chemotherapy has been correlated to the overexpression of ABC drug transporters including P-glycoprotein (P-gp) that actively efflux chemotherapeutic drugs from cancer cells. Our previous study showed that bitter melon (*Momordica charantia*) leaf extract (BMLE) was able to reverse the MDR phenotype by increasing the intracellular accumulation of chemotherapeutic drugs. In the present study, bioguided fractionation was used to identify the active component(s) of BMLE that is able to modulate the function of P-gp and the MDR phenotype in a human cervical carcinoma cell line (KB-V1). We found that kuguacin J, one of the active components in BMLE, increased sensitivity to vinblastine and paclitaxel in KB-V1 cells. A flow cytometry assay indicated that kuguacin J inhibits the transport function of P-gp and thereby significantly increases the accumulation of rhodamine 123 and calcein AM in the cells. These results were confirmed by ³H-vinblastine transport assay. Kuguacin J significantly increases intracellular ³H-vinblastine accumulation and decreased the ³H-vinblastine efflux in the cells. Kuguacin J also inhibited the incorporation of ¹²⁵I-iodoarylazidoprazosin into P-gp in a concentration-dependent manner, indicating that kuguacin J directly interacts with the drug-substrate-binding site on P-gp. These results indicate that kuguacin J modulates the function of P-gp by directly interacting at the drug-substrate-binding site, and it appears to be an effective inhibitor of P-gp activity in vitro and thus could be developed as an effective chemo-sensitizer to treat multidrug-resistant cancers [Pornsiri Pitchakarn, Shinobu Ohnuma, Komsak Pintha, Wilart Pompimon, Suresh V. Ambudkar, Pornngarm Limtrakul (Department of Biochemistry, Faculty of Medicine, Chiang Mai University, Chiang Mai 50200, Thailand), *The Journal of Nutritional Biochemistry*, 2012, **23**(1), 76-84].