Plants are used variously in human life wherein medicinal purpose is one among them. Traditional medicines play a major role in the primary health care of the larger population in China and India. Developing countries mostly use plant medicines in their health care than their developed counterparts. Traditional medicines in India deserve special mention not only for their rich cultural heritage but also for their use recorded in the literature of Ayurveda, Siddha, Unani, homeopathy and oral means by traditions passed from one generation to the other in the naattuvaidyas, grandmother medicines and ethnomedicines. As these systems are perfected in every generation over the years they are relied for developing drugs drawing their potential information as leads for addressing the problems in health care. Therefore, much attention has been paid towards this people science for developing potential drugs by isolation of compounds/biomolecules, screening them scientifically and also use leads generated out of the scientific screening for solving the diseases in the human society. Royalties should be shared among the ethnic tribes and scientists.

Against this background, two ethnomedicines were chosen for scientific screening and the potential leads are given in the present study.

A scrutiny of published literature revealed that reporting of 50 compounds from the species of *Suregada* and 218 compounds from the species of *Swertia*. There is no pharmacognostical work available for *Suregada* species. Antimicrobial activity has been reported by our research team during the course of research work on *Suregada angustifolia* and *Swertia corymbosa*. Other works are also cited. As far as
pharmacological studies are concerned, molecular studies are profusely available for the species of *Suregada* and biological reports in the case of *Swertia* species.

General standard procedures are followed for scientific screening. Preliminary phytochemical analysis, isolation of compounds by chromatographic techniques and identification of the compounds by spectral data, detailed pharmacognostical studies for *Suregada angustifolia*, antimicrobial activity following different procedures to fix MIC and MBC for various solvent extracts and some of the selected fractions and pharmacological studies for various solvent extracts and for some of the compounds are given in detail.

The preliminary phytochemical screening of *Suregada angustifolia* revealed the presence of phenols and steroids in root, stem and leaf extracts, triterpenoids except in chloroform leaf extract, coumarin in methanol extracts and hexane leaf extract, quinone in hexane and methanol root extracts and chloroform leaf extract, flavone and lignin in methanol extracts of all parts, root extracts and chloroform leaf extract, tannin, protein and sugar in methanol extracts of all parts and saponin and starch in methanol root and stem extracts. Seven compounds are isolated such as 5 compounds (friedelin, epifriedelinol, α-amyrin, β-sitosterol, n-octacosanol) from hexane and chloroform extracts of root, stem and leaves, one compound (β-sitosterol-3-β-D-glucopyranoside) from methanol extract of root stem and leaves, and one another compound (bauerenol) from hexane extract of stem bark.

The preliminary phytochemical screening of *Swertia corymbosa* showed the presence of phenol, quinone, steroid and triterpenoid in hexane, chloroform and methanol extracts of the whole plant, lignin in chloroform and methanol extracts, and flavone,
saponin, tannin, sugar, starch and protein in methanol extract. Six compounds are isolated, 3 compound each from hexane (swertiaperinin, swertianin and erythrocentaurin) and chloroform (octacosanoic acid and mixture of oleanolic and ursolic acid) fractions of methanol extract.

Pharmacognosy contains studies pertaining to anatomical studies of leaf, petiole, young stem, stem bark, root, root bark and their powder microscopic observations, and, analytical study of physico-chemical parameters (ash values, extractive values and fluorescent analysis).

Antibacterial activity and MIC of hexane, chloroform and methanol of root, stem and leaf extracts of *Suregada angustifolia* is given in detail. Antibacterial activity and MIC are recorded for benzene, ethyl acetate and butanol fractions of ethyl acetate extract (except *S. aureus* in butanol fraction) of *Swertia corymbosa*.

Pharmacology includes the observations on acute toxicity, hypoglycemic activity of MBVMV, an isolated compound, from *Suregada angustifolia* and hexane, chloroform and methanol extracts of the whole plant of *Swertia corymbosa*, hepatoprotective activity of hexane, chloroform and methanol extracts of the whole plant of *Swertia corymbosa*, anti-inflammatory activity of hexane, chloroform and methanol extracts of stem of *Suregada angustifolia* and the whole plant of *Swertia corymbosa*, analgesic activity of methanol extract of stem of *Suregada angustifolia*, MBVMV from *Suregada angustifolia* and hexane and chloroform extracts of the whole plant of *Swertia corymbosa*.

Phytochemical analysis of *Suregada angustifolia* shows the presence of six known triterpenoid compounds such as friedelin, epifriedelinol, α-amyrin, β-sitosterol, octacosanol and bauerenol and a glycoside such as β-sitosterol-3-D-glucopyranoside. Of
the six known compounds, friedelin, epifriedelinol, α-amyrin, octacosanol and β-sitosterol-3-D-glucopyranoside are reported for the first time to the genus *Suregada* from *Suregada angustifolia*.

Octacosanoic acid is reported for the first time to the genus of *Swertia* from *Swertia corymbosa*. Further, in the present study, two xanthones such as swertiaperinin and swertianin, a rare lactone such as erythrocentaurin are reported for the first time to *Swertia corymbosa*.

The present pharmacognostical study on *Suregada angustifolia* is new to science to the genus of *Suregada*. The anatomical aspects of the plant fall along two lines of evaluation such as the presence of calcium oxalate serves as defencing mechanism against herbivores by rendering the leaves unpalatable and utilization of calcium during the break up of calcium oxalate into calcium and oxalic acid at the time of need. The anatomical features provide adaptive values of deciduous nature of the tree to protect itself from excessive foliar transpirations during the unfavorable period. Further, heavily cuticularised epidermis, presence of hypodermal layers and sclerenchyma sheath around the vascular strands provide not only mechanical strength to the foliar organs but also offer insolation to the vascular tissues against hot dry atmospheric conditions.

Minimal presence of total ash in leaf powder provides a basis for judging the identity and purity of the crude drug especially in the powdered form. The presence of the chromatophores is responsible for the fluorescent exhibition of the powdered drug and different extracts.

Antibacterial activity of the hexane, chloroform and methanol extracts of leaf, stem and root of *Suregada angustifolia* is revealed activity on strain and dose-dependent
level. More activity is recorded for gram-negative bacteria than gram-positive bacteria. Comparison is made with similar earlier observations. The presence of bioactive compound(s) might be responsible for it. Stem chloroform extract is exhibited more activity than its hexane and methanol extracts and leaf and root bark extracts. Strong activity against *K. pneumoniae*, a urinary tract infectious bacterium, is provided scientific evidence to the ethnotherapeutic claim for the treatment of urinary tract infections as reported earlier by Ramesh (2000) and Viswanathan and Ramesh (2004).

Methanol extracts of stem, leaf and root bark are stronger with broad spectrum of activity in comparison to water and hexane. The results in the present study reveal that methanol is a better solvent for extraction of antimicrobial substances from plants than water, ethanol and hexane as mentioned earlier by Ahmad *et al.* (1998) and Eloff (1998).

Strong activity of chloroform extract of stem (25 to 40 mm) reminds the observation of Ramesh *et al.* (2001a) in *Begonia malabarica*. Hexane extract of stem expresses more activity than root and leaf hexane extracts due to the presence of more amounts of wax or fatty acids and this may be attributed for healing skin infections by the Kanis in the Kalakkad-Mundanthurai Tiger Reserve in India as reported earlier by Ramesh *et al.* (2002) in *Swertia corymbosa*.

Extracts show more activity than standard antibiotics: chloroform extract of stem of *Suregada angustifolia* against *A. hydrophila, E. coli, K. pneumoniae, P. vulgaris, S. typhi, V. parahaemolyticus* and *V. vulnificus* than Trimethoprin, Kanamycin, Nalidixic acid and Rifampicin; methanol extracts of leaf and stem against *K. pneumoniae, P. vulgaris, S. typhi, V. parahaemolyticus* and *V. vulnificus* than Kanamycin and Nalidixic
acid; and methanol extract of root against *P. vulgaris, V. parahaemolyticus* and *V. vulnificus* than Kanamycin and Rifampicin.

The results of MIC are in conformity with activity varying from 8 to 1 mg/ml to methanol extracts of stem, leaf and root such as less than 1 mg/ml against *A. hydrophila, K. pneumoniae, P. vulgaris, S. aureus* and *V. vulnificus* to chloroform extract and 8 to 1 mg/ml as that of methanol extract of stem to hexane extracts of stem and leaf. Secondary metabolites such as coumarins, flavonoids, phenols, quinones, tannins, terpenoids and saponins present in *Suregada angustifolia* could be responsible for the antibacterial activity as reported in the existing literature. As mentioned in the publication (Venkatesan et al., 2005a), maximum activity against *S. aureus* provides scientific evidence for the ethnotherapeutic claims in the treatment of skin infections and toothache problems.

Strong activity of the methanol extracts of stem, leaf and root bark, chloroform and hexane extracts of stem against *A. hydrophila, E. coli, K. pneumoniae, P. vulgaris, S. typhi, V. parahaemolyticus* and *V. vulnificus* responsible for causing pneumonia, urinary and respiratory tract infections, diarrhea, noscomial pathogen and opportunistic infections provides potential leads that can be researched further to discover and develop drugs for these diseases.

Benezene, ethyl acetate and butanol fractions of the ethyl acetate extract of *Swertia corymbosa* show more or less similar activity ranging from 10-21 mm. Better activity recorded to skin infection causing agent, *S. aureus* reveals the presence of waxy substances might be responsible for the use of topical agent by the Paliyans. Further, latter fraction expressed activity against *E. coli* and *S. typhi* might be due to the presence
of xanosthones as xanthones show significant activity against *E. coli*, responsible for urinary tract infections as reported by Saeed *et al.* (1998). Better activity against *Proteus vulgaris*, a urinary and nosocomial pathogen, is recorded for all the three fractions. MIC values are also supportive to this observation.

MBVMV shows significant reduction of blood glucose levels, viz., 197.61 mg/dl (P<0.05), 162.39 mg/dl (P<0.01) and 123.87 mg/dl (P<0.01) on 0, 7 and 15 day, respectively in STZ-induced diabetic rats. The activity of the compound is reported here for the first time in science from *Suregada angustifolia*.

Chloroform extract of *Swertia corymbosa* shows better and diabetic activity (92.76 mg/dl; P<0.001) than its hexane (104.48 mg/dl; P<0.001) and methanol extract (122.56 mg/dl; P<0.01) at 8 h in STZ challenged diabetic rats. The activity might be due to the presence of swertiaperinin, ursolic acid or other compounds present in *Swertia corymbosa*. However, further research is required in this regard.

The antioxidant activity expressed in this plant could be due to the presence of these xanthone compounds swertianin and swertiaperenin as reported by Patro *et al.* (2005). There has been no report or traditional use for the species of *Swertia* in the Asian countries to treat diabetes. Lowering of the blood glucose level and significant reduction of TBARS, GSH, GSH–R and SOD and significant increase of catalase activity are observed to the various crude extracts and they prevent STZ action in the diabetic rats.

Significant inhibition of elevated serum enzymes to CCl₄-induced toxicity is observed in the order of hexane, methanol and chloroform extracts of *Swertia corymbosa*. The findings of preliminary phytochemical investigation of these extracts and their
activity provide scientific evidence for the plant in the treatment of jaundice by the Paliyans.

Significant anti-inflammatory activity is recorded for *Suregada angustifolia* and *Swertia corymbosa* at 3 h and 12 h intervals wherein the activity of the various extracts of the *Suregada angustifolia* is marked than *Swertia corymbosa* and diclofenac. It is inferred that phenolic and triterpenoid compounds present in *Suregada angustifolia* and *Swertia corymbosa* may be blocking prostaglandin biosynthesis and prostaglandin-like substances.

MBVMV from *Suregada angustifolia* shows more analgesic activity than its methanol extract. In the case of *Swertia corymbosa*, chloroform extract performs better than hexane extract. This may be attributed for the presence of flavonoids and flavonoidal compounds which are reported in the present study. Further, the present study shows analgesic property of the triterpenes also. Thus the analgesic activity could be the combined effect of these compounds.

It is evident from the present study that the present study has not only provided scientific evidence for the ethnotherapeutic claims but also generated leads on potential extracts and compounds with their mode of action drawing attention for further research to discover and develop drugs.