

Pippali, Ginger and Asafoetida have potential to treat gastric ulcer

In Charaka Samhita fruits of *pippali*, rhizomes of ginger and oleoresin of *hing* are mentioned as ingredients of an ayurvedic drug, *Dipaniya Mahakasaya* which is used to improve digestion and gastric system. Ulcers are thought to be due to imbalances in gastric offensive and defensive mucosal factors. In spite of numerous drugs available, peptic ulcer is still a major cause of morbidity. In search

of more ayurvedic drug for their potential antiulcerogenic properties, experiment was conducted on rats. Oral administration of water decoction of *Piper longum* Linn. and *Zingiber officinalis* Linn. and colloidal solution of *Ferula* species in the dose of 50 mg/kg showed significant protection against gastric ulcers. The



antiulcerogenic effect seemed to be due to the augmentation of mucin secretion and decreased cell shedding (Agrawal *et al*, *Indian J Exp Biol*, 2000, **38**, 994).

Blood anticoagulant from marine algae

In medicine blood anticoagulants are used for the management of thrombotic and vascular disorders. The most widely known and therapeutically used compound is heparin. Though heparin is a primary anticoagulant drug, it has some disadvantages like it is extracted from internal organs of higher animals and purified; hence its production is difficult and it exhibits haemorrhagic like side effects. These disadvantages of heparin made it imperative to discover novel anticoagulant agents. Anticoagulant properties of marine algae have been extensively studied for the last 60 years but therapeutic interest of algal sulphated polysaccharides (SPS) as anticoagulants has recently been highlighted. SPS have not been reported from higher plants. The major sources of SPS are three divisions of marine algae, viz. Rhodophyta (Red

Algae), Phaeophyta (Brown Algae) and Chlorophyta (Green Algae). So far about 150 species representing these groups have been reported to have blood anticoagulant activities. Some of the species are: *Phytophora brodiaei*, *Grateloupia turuturu*, *Gigartina acicularis*, *Acanthophora spicifera*, *Eisenia bicyclis*, *Hizikia fusiforme*, *Laminaria angustata*, *L. religiosa*, *Pelvetia canaliculata*, *P. wrightii*, *Padina pavonia*, *Dictyota dichotoma*, *Codium dwarkense* and *C. tomentosum*. Sulphated galactan from a red algae, *Grateloupia indica* of Indian waters has exhibited anticoagulant activity as potent as heparin.

Thus in future these red, brown and green jewels of Sea are going to emerge as important class of bioactive natural products (Shanmugam & Mody, *Curr Sci*, 2000, **79**, 1672).

Blood sugar lowering Cashew Nut

In Nigeria, Cashew Nut (*Anacardium occidentale* Linn.) leaves are employed by herbalists for the treatment of diabetes mellitus. An experimental study was done on the aqueous leaf extract in both the normoglycaemic and alloxan induced rabbits. The extract produced marked reduction in blood sugar levels between 2-3 hours of administration. The potency of the extract was found comparable with that of tolbutamide [Esimone *et al*, *J Nat Remed*, 2001, **1**(1), 60].



Take Tea, No Problem

After water, tea is the next liquid which is taken by humans throughout the world. Originated in China around 3000 BC, tea has spread all over the planet. Mainly three kind of tea are produced: green (unfermented), oolong (semi-fermented) and black (fully fermented). The bitterness and astringency of tea infusion is due to the presence of colourless, water-soluble chemical compound, catechins which are flavanol, and these form 20-30% of the dry weight of green tea. Almost all of the characteristics of tea e.g. its taste, colour and aroma are associated with modifications of the catechins. Other important chemicals of tea are flavonols eg. quercetin, kaempferol and myricetin. These chemical components are known to have strong antioxidative and free radical scavenging activities and are much more

effective than vitamins C and E at protecting cells from free radical damage. Numerous recent papers have reported effects on coronary heart disease and inhibition of carcinogenesis in experimental animals by tea. Japanese, who drink more green tea have lower mortality rates from stomach, lung and liver cancers. Possibly drinking of tea reduces incidence of both cancer and heart disease in humans. In addition to this polyphenols in green tea can prevent dental caries by inhibiting cariogenic bacteria, *Streptococcus mutans* and *S. sobrinus*. Tea also reduces acid concentration on the tooth enamel and works as breath freshener. However oral iron drugs are not advisable to take with a cup of tea.

Tea catechins in green tea extract is reported to improve the potential of cereals, cakes and biscuits, dairy products, instant noodles, confectionery ice-cream.

In shampoos, moisturizing creams, perfumes and sunscreens tea extract is a common component. In toothpaste and shampoos, interestingly tea extract is used in tobacco control health care drink which helps smokers to stop smoking.

However, further research is needed before defining the role of tea in cancer risk in human and its interaction with food and drink components. In another article entitled, cancer chemoprevention by tea polyphenols, Lin & Liang from China stated that tea consumption might reduce the risk of certain cancers but a clear understanding of the chemical properties of tea and the mechanisms by which tea components may affect the carcinogenesis of specific cancers are important issues and deserve further exploring [Wang *et al*, *Trends Food Sci Technol*, 2000, **11**, 152; Lin & Liang, *Proc Nat Sci Counc ROC(B)*, 2000, **24**, 1].

Shikakai saponin may enter into medicine

Shikakai [*Acacia sinuata* (Lour.) Merrill syn. *A. concinna* DC.] pods are used for washing hairs mainly as hair growth promoters but recently their cytotoxic potential against human HT-1080 fibrosarcoma cells has been reported by Institute of Natural Medicine, Toyama, Japan. Three saponins named kinmoonosides A-C, isolated from methanolic extract of pods, showed significant cytotoxic activity against HT-1080 fibrosarcoma cells (Tezuka *et al*, *J Nat Prod*, 2000, **63**, 1658).

Flowers of *Helichrysum* possess analgesic and anti-inflammatory activity

Helichrysum bracteatum (Vent.) Andr. var. *albidum* DC. is found growing wild in Tamil Nadu. In search of medicinal plants, having anti-inflammatory and analgesic activities, flowers of this plant were evaluated. Hispidulin (6-methoxy-5, 7, 4'-trihydroxy flavone) isolated from the flowers showed anti-inflammatory activity in carrageenin induced albino rat hind paw edema. It also showed analgesic activity by increasing the pain threshold for the stimuli when tested in mice using tail clip and hot plate methods (Kavimani *et al*, *Indian Drugs*, 2000, **37**, 582).

Spiny Fruits of *Gokhru* can kill human malignant melanoma cell line

Puncture Vine (*Tribulus terrestris* Linn.) is a prostrate annual up to 90 cm in length and is commonly found throughout India. It is seen everywhere soon after the first showers. About 1.85 tonnes of the fruits, roots and occasionally the entire plant are reported to be collected from Saharanpur, Uttar Pradesh for preparing various drugs. In Indian and Chinese traditional and ayurvedic medicines, decoction or infusion of fruits is used in cases of



spermatorrhoea, phosphaturia and diseases of genito-urinary system, as well as kidney, liver and eye diseases. Recently three steroidal glycosides viz., tribulosaponin A & B and isoterrestrosin B have been isolated from these fruits. Compound isoterrestrosin B exhibited cytotoxicity against a human malignant melanoma cell line (SK-MEL), with an IC_{50} value of 6.7 $\mu\text{g/ml}$ (Bedir & Khan, *J Nat Prod*, 2000, **63**, 1699).

Cancer chemopreventive agents from Smoke Tree

As a part of programme to discover novel cancer preventive agents from plants, scientists at University of Illinois at Chicago, found that methanolic extract of dried aerial parts of Smoke Tree (*Cotinus coggygia* Scop. syn *Rhus cotinus* Linn.) contains antioxidative constituents. These compounds exhibit significant scavenging ability of stable 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radicals (Westenburg *et al*, *J Nat Prod*, 2000, **63**, 1696).

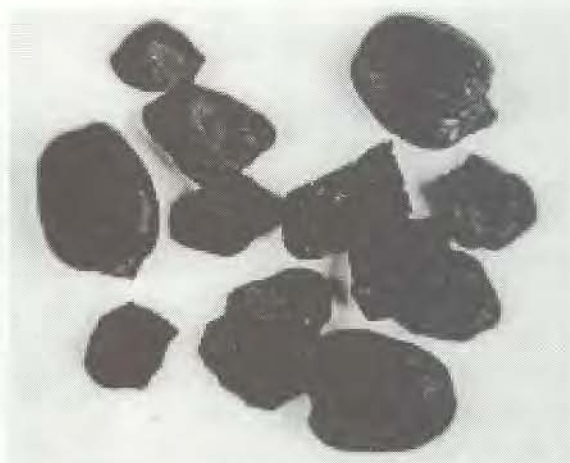
Pure Cocoa powder contains cancer preventive polyphenols

The seeds of Cocoa (*Theobroma cacao* Linn.) are used as ingredients for various ice-cream, puddings, beverages and many bakery products. They are reported to be rich in polyphenols. Now-a-days polyphenols have gained considerable attention because of their antioxidant, antimutagenic and cancer preventive activities; some polyphenols may reduce the risk of coronary heart disease. Reportedly one of the mechanisms responsible for these effects involves their inhibition of the oxidation of low density lipoprotein (LDL). The studies conducted on analyses of polyphenols in cacao liquor, cocoa and chocolate revealed that pure cocoa powder contains more polyphenols. However, further experiments are required to conclude the role of cocoa products in controlling certain diseases (Natsume *et al*, *Biosci Biotechnol Biochem*, 2000, **64**, 2581).



Marking Nut can be a future antistress drug

The marking nut (*Semecarpus anacardium* Linn.) is not limited to marking purpose only, its extract is reported to be effective against many diseases viz, arthritis, tumours and infections. In Ayurveda it is known as *Ardha Vaidya* (multipurpose medicine). An experiment was conducted to elucidate the ultrastructural changes in degenerating hippocampal neuron cell bodies of stressed rats and protective effects of Marking Nut extract. The study revealed that after the treatment, the number of cells demonstrating degenerating characteristics was significantly reduced (80%). Thus in future these nuts having neuroprotective and antistress activity may be useful in controlling stress-related problems in human beings (Shukla *et al*, *Indian J Exp Biol*, 2000, **38**, 1007; Premalatha, *ibid*, 2000, **38**, 1177).



Bioactive compounds from *Croton oblongifolius* Roxb.

In Thailand this plant is used as a traditional medicine for treating dysmenorrhoea, dyspepsia, dysentery and as a purgative. In combination with *Croton sublyratus* it is used for treating gastric ulcers and gastric cancers. Experiments conducted on the crude hexane extract of the sun dried stem bark revealed that the bark contains an active principle characterized as 2,3-dihydroxy-labda-8(17), 12(E), 14-triene. The compound was tested for its cytotoxicity against human tumour cell lines. It showed non-specific, moderate cytotoxicities against human gastric carcinoma (KATO-3, 2.2µg/ml), colon adenocarcinoma (SW620, 2.7µg/ml), breast ductolcarcinoma (BT 474, 4.6µg/ml), liver hepatoblastoma (HEP-G2, 3.7 µg/ml) and undifferentiated lung carcinoma (CHAGO, 3.3 µg/ml) (Roengsumran *et al*, *Phytochemistry*, 2001, **56**, 103).

Achyranthes A waste place herb has great potential against cancer

An oligosaccharide, AbPS has been isolated from roots of *Achyranthes bidentata* Blume, a wild herb found throughout India. The isolated compound significantly enhanced humoral response and B lymphocyte proliferation and antagonised the immunosuppressive effects of cyclosporin A (Cys A) in mice. AbPS alone or with Con A, increased the production of tumor necrosis factor (TNF-α) from murine splenocytes and macrophages. The potency is comparable with the classical TNF-α inducer BCG. AbPS also induced a significant enhancement of natural killer (NK) cell activity. In clinical trials with cancer patients treated together with chemotherapy or radiotherapy, AbPS maintained their peripheral WBC counts to normal and improved their quality of life [Li, *Pharm Biol*, 2000, **38** (Suppl), 33].

The folklore antidiabetic herb has proved its effect in rats

Vajradanti, *Barleria prionitis* Linn., a much branched, prickly shrub, up to 3m in height is found growing throughout the hotter parts of India and also grown as a hedge plant in gardens. The plant is mainly used as antiseptic and to relieve toothache. In the folklore of Sherveroy Hills of Tamil Nadu it is used in diabetes hence a study was made to confirm the antidiabetic effect of leaf, stem and root of the drug on alloxan induced hyperglycemic rats. The alcoholic and aqueous extracts of leaf and root caused significant fall in blood glucose level in diabetic rats and are found as potent as chlorpropanamide in reducing the sugar levels [Geetha & Wahi, *J Nat Remed*, 2001, 1(1), 64].



Sweetpotato is a good friend of diabetics

Japanese researchers have reported that white skinned sweetpotato (*Ipomoea batatas* Linn.) showed antidiabetic activity in Streptozotocin induced diabetic rats and genetically diabetic model. The active component has been presumed to be an acidic glycoprotein which is located exclusively in the cortex. It is also reported that white skinned sweetpotato increases blood insulin levels like tolbutamide and has insulin increasing activity in normal rats. Thus sweetpotato is expected to be a new unique antidiabetic agent in both insulin-deficient diabetic models and insulin-resistant diabetic models (Kusano *et al*, *Biosci Biotechnol Biochem*, 2001, 65, 109).

Night Jasmine contains antitrypanosomal potential

Night Jasmine known as *Harsingar* in Hindi (*Nyctanthes arbor-tristis* Linn.) is a common ornamental tree, grown in lawns and roadsides. Its beautiful small flowers make a carpet on the ground and they are used for making natural dye.

Leaves of the plant are reported to possess activity against *Plasmodium falciparum*, *Leishmania donovani* and



Entamoeba histolytica. A study on antitrypanosomal activity of 50% ethanolic extract of leaves on Swiss mice has been done. The extract exhibited trypanocidal activity both *in vitro* and *in vivo* at higher doses only, i.e. 1000 µg/ml and 300 and 1000 mg/kg, respectively (Talakal *et al*, *Pharm Biol*, 2000, 38, 326).

Diuretic activity of *Boerhaavia*

Boerhaavia verticillata

Poir. is known as 'Swet Punarnava' in the Sanskrit. The leaves of this plant are reputed for their use in the indigenous system of medicine for the treatment of dyspepsia, jaundice, enlargement of the spleen and abdominal pain. A decoction of the whole plant is taken with milk in the early morning to cure jaundice, weakness and for treatment of renal and urinary tract diseases.

To validate the folkloric use of this plant Bajpai and Ojha at the Institute of Medical Sciences, Varanasi investigated the plant as a diuretic in an experimental model. The ethanolic and aqueous extracts of whole plant were administered to normal and adult albino rats and were monitored over a period of 24 hour.

Experimental results indicated that both the ethanol and aqueous extracts have diuretic activities but the ethanol extract has less diuretic and natriuretic activity than the aqueous extract. These observations support the use of the plant in traditional medicine for the treatment of renal and urinary tract diseases (Bajpai & Ojha, *Pharm Biol*, 2000, 38, 258).

Antimicrobial activity of *Berberis*

Berberis asiatica Roxb. ex DC. is known as *Darubaridra* in Sanskrit. In India and Nepal it is used traditionally to accelerate the process of wound healing. In Ayurvedic classical text, *Susruta Samhita* its use in the management of infected wound has been described. It is also used against pneumococcal infection. Berberine, the major alkaloid of the plant is known for its activity against cholera, severe diarrhoea and amoebiasis.

Bhandari and others studied different extracts from the stem bark and the alkaloid fractions derived from the aqueous extract for their putative anti-microbial activity against a battery of microorganism. The activity of the fractions was compared with that of berberine. The methanolic extract was found to be most active and other fractions were also found to be superior to berberine, suggesting that in addition to berberine other antimicrobial agents are present in the plant (Bhandari *et al*, *Pharm Biol*, 2000, 38, 254).



Hepatoprotective and cardiac inhibitory *Bhringaraja*

Eclipta alba Linn. (Hindi- *Bhangra*; Sans.- *Bhringaraja*) an annual prostrate herb found as a weed throughout India is a traditional medicine for liver disorders. Experiments conducted on albino rats confirmed hepatoprotective activity of ethanolic extract of its leaves. On frog isolated heart it showed cardiac inhibitory activity. Leaf callus extract also showed both the activities (Zafar & Sagar, *Pharm Biol*, 2000, 38, 357).

Analgesic activity of *Peperomia*

Traditionally the aerial parts of *Peperomia pellucida* H.B. & K. are used in Nigeria in the treatment of measles, small pox, male impotence, mental disorders and breast cancer. Peter Aziba and others at Ogun State University, Nigeria studied the analgesic activity of the methanolic extract of the aerial parts. When given orally they found significant activity on acetic-acid induced writhing pain in mice (Aziba *et al*, *Fitoterapia*, 2001, 72, 57)

A promising herbal hepatoprotective drug from Milk Thistle

Milk Thistle or St Mary's Thistle [*Silybum marianum* (Linn.) Gaertn.] is found as noxious weed in waste places and roadsides. The plant is a herb up to 1.5m in height with spiny purplish-red flowerheads and large spiny leaves. The leaves contain prominent white reticulation.

Since the time of Theophrastus (4th century B.C.) Milk Thistle is recommended for the treatment of plaque and for congestive conditions of the liver and spleen. In 20th century also it gained much attention and its fruits have been recommended for their hepatoprotective effect and as one of the best remedies for liver complaints such as hepatitis.

Silymarin extracted from the seeds (achenes) is rich in flavonolignans which consists of isomers, silybin, silydianin, isosilybin and silychristin. Clinical trials on humans with silymarin (140 mg three times daily) have been carried out in acute viral hepatitis, chronic hepatitis, alcoholic liver diseases, cirrhosis and toxic liver damage and it was found to have positive and non-toxic effect (Choksi *et al*, *Indian Drugs*, 2000, 37, 566).

Sedative properties of *Guinea Rush* rhizome

The decoction of the rhizome of *Guinea Rush*, *Cyperus articulatus* Linn. is used in several African countries in the treatment of a wide variety of human diseases. The decoction is also used to treat some diseases of the Central Nervous System. The scientists at University of Yaounde, Cameroon studied the pharmacological properties of this medicinal herb and found that the rhizome has pharmacological properties similar to those of sedatives. The extract administered intraperitoneally, possesses properties that decrease the spontaneous motor activity and potentiate the hypnotic effect of sodium thiopental and diazepam. When associated with sodium thiopental or diazepam, the aqueous extract facilitates sleep induction and increases the total sleep time without any concomitant analgesic effect (Rakotonirina *et al*, *Fitoterapia*, 2001, 72, 22).

Antimicrobial activity of Indian Mahogany Tree leaves

The leaves of *Chukrasia tabularis* A. Juss. are traditionally used as astringent and antidiarrhoeic. Nagalakshmi and other scientists at Sri Krishnadevaraya University, Anantpur, Andhra Pradesh studied the antimicrobial properties of the leaf extracts against ten microorganisms. They found that the ethyl acetate and methanol extracts are effective against most of the tested organisms (Nagalakshmi *et al*, *Fitoterapia*, 2001, 72, 62).

In vitro production of L-Dopa from Banana

L-DOPA (L-3,4-dihydroxyphenylalanine), oral administration of which is known to relieve Parkinson's disease, a progressive disorder associated with a deficiency of dopamine in the brain. Commercial production of DOPA from intact plants of *Mucuna prurita* Hook. seeds is hampered by the herbaceous twining habit and presence of stringent trichomes on the pods which cause a very strong itching sensation creating difficulties in large scale cultivation of plants and harvesting of their pods.

Scientists at Bhabha Atomic Research Centre, Mumbai (BARC) analysed shoot and callus cultures of Banana for the accumulation of L-DOPA. Treatment of cultures with L-tyrosine and L-phenylalanine yielded higher levels of DOPA compared to those in control cultures. Among the two amino acids, phenylalanine induced higher accumulation of DOPA. The study suggests that banana may become an useful system for the production of DOPA (Bapat *et al*, *Pharm Biol*, 2000, **38**, 271).

Spirulina supplementation improves blood haemoglobin levels

Iron deficiency, anaemia, the most prevalent micronutrient deficiency in the world, severely affects children and women. A low intake of iron coupled with poor bioavailability is the frequent cause of iron deficiency anaemia. A basic modification in the diet wherein the iron is made more bio-available is an important public health approach to solve the problem of iron deficiency anaemia. This may be achieved by a reduction in the quantity of inhibitors and/or by increasing the quantity of enhancers. One such food that is free of iron absorption inhibitors and is rich in enhancers, i.e., protein, folic acid, vitamin B12 is blue-green alga, *Spirulina pratensis* (Nordst.) Geitl. Mani and others at Vadodara, Gujarat studied the effect of spray dried Spirulina powder supplementation on the haemoglobin levels of adult anaemic girls. Diets of these girls were supplemented with 5g of

powder daily for a period of 30 days. Supplementation was carried out in the form of syrup and *parathas*. The prevalence of anaemia in the girls was 28.2%. A mean increase of 1.17g/dl i.e. 10.33% in the blood haemoglobin levels was seen in all the girls. A mean increase in the blood haemoglobin levels by 1.32 g/dl i.e. 11.65% was seen in those girls supplemented with spirulina in the form of syrup, while a mean increase of 0.88 g/dl i.e. 7.72% was seen in those supplemented with spirulina as *parathas*. This increase could be due to the absence of inhibitors of iron absorption-oxalates and phytates in the syrup which were otherwise present in the *parathas*. It is concluded that spirulina could be effectively used to combat mild to moderate degrees of iron deficiency anaemia (Mani *et al*, *J Food Sci Technol*, 2000, **37**, 642).

Communist weed is a medicinal weed

A weed, *Chromolaena odorata* (Linn.) King & Rob., known as Christmas Bush or Communist Weed is commonly found in waste places, roadsides and farmlands throughout eastern and southern India, Upper Gangetic Plain and the Himalayas up to 2,400 m. In Nigeria, local people use decoction of the leaf in combination with lemon grass and guava leaves for the treatment of malaria. The plant is also employed to stop bleeding in wound dressing and other skin infections. It is also credited with anti-diarrhoeal, astringent, antispasmodic, antihypertensive, anti-inflammatory and diuretic properties.

Experimental studies on male wistar rats have confirmed anti-inflammatory activity of a methanol extract of its leaves in the carrageenan rat paw model. It also showed antipyretic and antispasmodic activities in mice and rats (Taiwo *et al*, *Pharm Biol*, 2000, **38**, 367).

Anti-inflammatory activity of Nutmeg oil

Nutmeg is the dried aromatic kernel of the seed of Nutmeg (*Myristica fragrans* Houtt.). It contains 10% volatile oil which can be extracted by steam distillation in an all glass apparatus from the petroleum ether extract. The pharmacological properties of nutmeg oil

in rats and mice have been investigated. The oil exhibited an anti-inflammatory effect on acute inflammation.

Nutmeg is reported to contain myristicin which is responsible for its mild hypnotic activity. It inhibits prostaglandins and related endochemicals produced in the human colon.

Anti-inflammatory activity of the oil was studied on carrageenan-induced rat paw edema and its anti-diarrhoeal activity on castor oil induced diarrhoea in mice. The results indicated that nutmeg oil acts like non-steroidal anti-inflammatory drugs such as aspirin and indomethacin. The anti-diarrhoeal effect of this oil was also observed, as exhibited by reduction in number of wet faeces in rats. Present report confirms its traditional use in diarrhoea and inflammation (Olajide *et al*, *Pharm Biol*, 2000, **38**, 385).



Inhibitory actions of **Turmeric** on histamine release

Turmeric (*Curcuma longa* Linn.) is an ancient traditional medicine used as a component of ointments for pustular dermatitis and for diseases which are associated with abdominal pains and for curing wounds, swellings, allergic cough and cold. To confirm anti-allergic activity experimental study was done on peritoneal mast cell of mice and rats. Ethyl acetate extract of the rhizome showed suppressive activities on allergy types I and IV. Possibly curcuminoids are the active principles responsible for this activity of turmeric.

A study has also been made to clarify the features of inhibitory actions of the ethyl acetate extract of the rhizome on the histamine release from rat mast cell, and to compare the effect with that of curcumin. At a concentration of 50 mg/ml, both the extract and curcumin inhibited the histamine release induced by concanavalin A, compound 48/80 in the absence or presence of Ca^{2+} and A 23187. The effect of the ethyl acetate extract has been found to be stronger than that of curcumin suggesting that the extract might contain other more active principles than curcumin and that has to be studied further (Yano *et al*, *Natural Med*, 2000, **54**, 318, 375)

The inhibitors of α -glucosidase enzyme

The leaves of Surinam Cherry, *Eugenia uniflora* Linn., are called 'Nangapiry' in Paraguay. It is a natural medicine in Paraguay and its decoction or infusion is used in folk medicine as antidiarrhoeic, diuretic, antirheumatic, anti-febrile and antidiabetic. The leaves are reported to be used as digestive, eupeptic and carminative and also to lower blood cholesterol levels, to control uric acid levels and to reduce weight and blood pressure. The extract of this plant has been tested for inhibitory activity on xanthine oxidase for effects on lipid metabolism, and for anti-inflammatory effects, analgesic effects and intestinal transit. Essential oil from the leaves has been shown to have anti-microbial activity. The effects on hyperglycaemia and hypertriglyceridemia in mice have also been studied.

Scientists in Japan studied water soluble extract of the leaves and found that the extract showed inhibitory activities on the increase of plasma glucose level in the sucrose tolerance test (STT) conducted on mice. The portion absorbed on a cation exchange resin was also found to inhibit α -glucosidases. From the active portion the compounds uniflorine A, uniflorine B and methylpiperidine-triol were isolated.

Matsumura and the team compared the α -glucosidase inhibitory activity of these compounds with the standard commercially available α -glucosidase inhibitor, acarbose. They found that the inhibition by uniflorines was dose dependent and comparable to that of acarbose (Matsumura *et al*, *Pharm Biol*, 2000, **38**, 302).

Marching towards filariasis control

In India, lymphatic filariasis (elephantiasis) accounts for 40% of the global prevalence of infection. It is caused by the blood-borne filarial parasites, *Wuchereria bancrofti*, *Brugia malayi* and *B. timori*. These filarial parasites pass a complex life cycle and are transmitted through mosquito vector. It has been declared by World Health Assembly that by the year 2020 the transmission of these parasites will be checked. At present, several months after treatment the parasites reappear, therefore, new drugs replacing the use of drugs like diethyl carbamazine, ivermectin and albendazole, is required. *Wolbachia*, the bacterial endosymbiont of the filarial parasites showed great potential. These bacteria are a group of intracellular bacteria (order Rickettsiales) found in the arthropods, insect, pests, disease vectors and filarial nematodes. The *Wolbachia* endosymbionts of filarial parasites are found to provide a novel target for antibiotic based chemotherapy (Mohanty, *Curr Sci*, 2001, **80**, 614).

Shoe flower leaves are a potent hypoglycaemic agent

Hypoglycaemic effect of leaf extract of Shoe Flower (*Hibiscus rosa-sinensis* Linn.) in glucose and streptozotocin induced hyperglycaemic rats was investigated by Sachdewa and others at Dayalbagh Educational Institute, Agra.

The effect of extract on blood glucose level and glucose tolerance using Wistar rats was studied. Repeated administration of the extract, once a day for seven consecutive days, at an oral dose equivalent to 250 mg/kg, significantly improved glucose tolerance in rats. The peak blood glucose level was obtained at 30 min of glucose load (2g/kg), therefore a decreasing trend was recorded up to 2 hours. It is further observed that repeated ingestion of the reference drug tolbutamide, a sulphonylurea and the extract brings about 2 to 3 fold decrease in blood glucose concentration as compared to single oral treatment.

The results showed that the extract (250mg) improves the glucose tolerance by 47% compared to tolbutamide (100mg, 91 %) (Sachdewa *et al*, *Indian J Exp Biol*, 2001, **39**, 284).



Gulnar variety of Pomegranate contains cholinergic components

The Soxhlet and cold water extracts of the dried flowers of *Punica granatum* Linn., 'Gulnar' variety, were tested for their anti-hypertensive activity. Both the extracts reduced the heart rate and force of contraction of the isolated frog heart. The effect produced by both the extracts was blocked by atropine thus showing the presence of cholinergic component in these flowers [Jolly *et al*, *Indian J Nat Prod*, 2000, **16**(1), 3]

A potential antistress drug

There are many species of the genus *Polyalthia* Blume and most of them are grown as ornamental trees. They are also used in medicine. The stem bark of *Polyalthia cerasoides* Bedd. (Hindi-Kudumi) is reported to be used by local people in Tirunelveli district (Tamil Nadu). It is given as a tonic to reduce mental stress. To confirm this practice, pharmacological study has been done on albino rats. It revealed that the alcoholic extract of the stem bark significantly prevented cold immobilization stress induced changes in lipid peroxidation, ascorbic acid in both brain and liver and vitamin E levels in the serum. This study suggests that the stem bark can be developed as an antistress drug in future [Padma *et al*, *Indian J Nat Prod*, 2000, **16**(1), 20].

Green tea residue is a potential anti-cancer agent

Green tea infusion has been reported to show anti-carcinogenic and anti-metastatic effects in several animal models and humans. Katsuno and his team studied the potential anticancer activity of green tea residue remaining after brewing. The utilization of the insoluble tea residue which is otherwise wasted may be utilized by detecting its biological activity. In this study the residue was enzymatically digested and the dissolved fractions were examined for their apoptosis inducing activity in cancer cells.

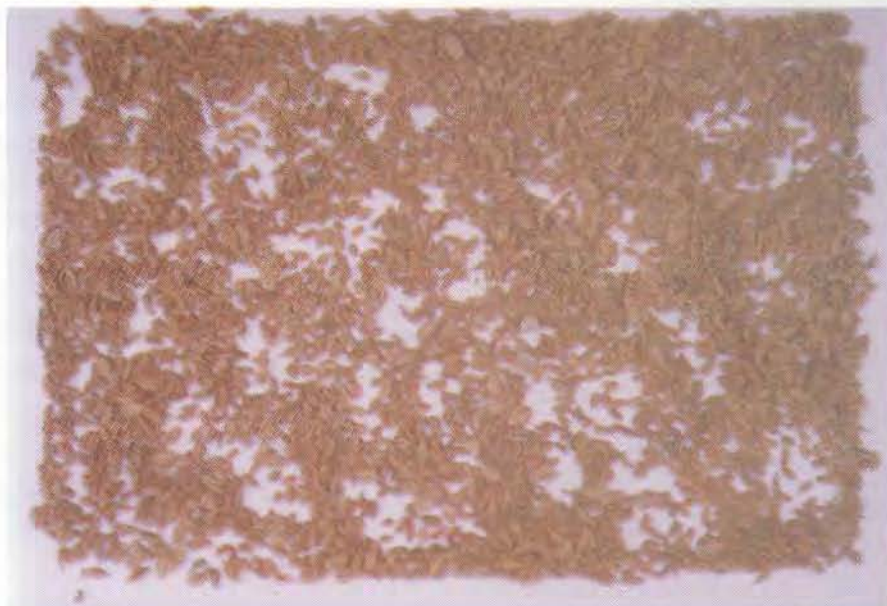
Powdered green tea (4 g) was extracted with 500 ml of hot water and then with 100 ml of 70% ethanol three times each. The residue was digested with driselase (1 g) a mixture of cellulase, pectinase and proteases in 100 ml of a 0.1 M acetate buffers (pH 5.5) at 37° C for 24 hours. To the digest, absolute ethanol was added to 70% and the insoluble materials were removed by filtration. The soluble fraction was evaporated in vacuo to dryness. The yield was 1.7 g and the fraction thus obtained is designated as KDF. Other fractions were designated as CPF, SPE, SHF and WCF. These preparation were dissolved in 70% ethanol for test fractions. To test the effect of each of these test fractions on cell proliferation, U 937 human histiocytic lymphoma cells were incubated with or without a test fraction in culture medium of 10% fetal bovine serum. After 24 hour, the number of viable cells was counted by the Trypan blue dye exclusion method. The results show that KDF induced the death of U 937 cells but other fractions were not very effective. Thus the green tea residue may be a useful source of compounds with beneficial biological effects (Katsuno *et al*, *Biosci Biotechnol Biochem*, 2001, **65**, 198).

An effective anti-diabetic agent

Increased cases of diabetes mellitus made it imperative to study and find out effective natural medicines for this disease. Among many other medicines, Bael [*Aegle marmelos* (Linn.) Correa ex Roxb.] leaves are also used for centuries in folk medicines for diabetes. Aqueous extract of these leaves has been reported to have both hypoglycemic and anti-hyperglycemic effect in rats as well as rabbits. A recent study has further confirmed the hypoglycemic effect of ethanolic extract of leaves in glucose induced hyperglycemic rats. During this study an oral dose of ethanolic leaf extract equivalent to 250 mg/kg was given for seven consecutive days which lowered blood glucose by 67 per cent following a heavy carbohydrate diet (Sachdewa *et al*, *J Environ Biol*, 2001, **22**, 53).

Carrot seed oil is analgesic and anti-inflammatory

The medicinal value of carrot (*Daucus carota* Linn.) is well known. Though the crop is grown mainly for its roots, part of it is left for seed collection. Seeds also have many medicinal properties. The volatile oil of seeds has been studied for analgesic and anti-inflammatory activities. It showed significant dose dependent inhibition in carrageenan induced paw oedema and acetic acid-induced writhing in rat and mice, respectively. The active constituents are yet to be isolated [Porchezian *et al*, *Indian J Nat Prod*, 2000, **16**(1), 24].



Clinical effect of Bala Haritaki on serum cholesterol



Chebolic Myrobalan (*Terminalia chebula* Retz.) (Hindi-Bala Haritaki) is an ancient Ayurvedic medicinal plant. The drug is composed of unripe fruits which usually lack the seed and are egg shaped black or brown in colour, 2-4 cm long and have five distinct lines on it.

During clinical trial 15 patients were given *Bala Haritaki* in the dose of 2 g in powder form with lukewarm water for 6 weeks. The patients assessment showed significant reduction in the level of serum cholesterol, serum triglycerides, total lipids, low density lipids (LDL), very low density lipids (VLDL); there was significant increase in the level of high density lipids (HDL). Thus *Bala Haritaki* possesses cardi tonic effect also [Sood & Sharma, *J Res Ayurv Siddha*, 2000, **21**(1-2), 11].

Hepato protective activity of Mexican Daisy

The ethanolic extracts of the leaves of Mexican Daisy, *Tridax procumbens* Linn. is reported to possess antihepatotoxic activity. In view of this known fact hepatoprotective action of leaves has recently been studied against the hepatotoxicity induced by the high doses of paracetamol in Wistar rats.

Paracetamol (Acetaminophen) is a safe analgesic and antipyretic when taken appropriately. Since it is available without prescription, it has become a common household analgesic. Overdose (750 mg/kg dose) causes hepatic (liver cell) necrosis in men. During this study shade dried powdered leaves were given to rats with a paracetamol suspension (750 mg/kg). The results obtained showed that the normal liver weight (3.7 g) was decreased to 2.8 g due to paracetamol toxicity. But by the *Tridax* supplementation with paracetamol, the liver weight raises up to 3.3 g. Due to paracetamol toxicity, blood urea level was also reduced from 25.7 mg/dl to 8.8 mg/dl but the leaves of this herb increased the urea level significantly (19.9 mg/dl). Thus this weed can be used to reduce the hepatotoxicity caused due to overdose of paracetamol. However, this needs further confirmation [Kumar *et al*, *Indian J Pharm Sci*, 2001, 63(1), 64].

Wound healing activity of Stone Apple

Aegle marmelos Corr. ex Roxb. (Hindi-Bael) fruits are valued for their cooling, antidiabetic and antidysenteric properties. In traditional practices, leaves are used externally to heal wounds, boils and cuts. Based on this, scientific evaluation to confirm wound healing activity of leaves was studied by topical and intraperitoneal administration of methanolic extract based ointment and injection on two types of wound models in Wistar albino rats (i) the excision and (ii) the incision wound model. In the excision model the extract treated wounds have been found to epithelialise faster and the rate of wound contraction is also higher, as compared to control wounds. The extract facilitated the healing process as evidenced by increase in the tensile strength in the incision model. The results are comparable to those of a standard anti-inflammatory and wound healing ointment, Nitrofurazone. Thus the therapeutic potential of this easily available natural raw material can be exploited [Jawanth *et al*, *Indian J Pharm Sci*, 2001, 63(1), 41].

Hypoglycaemic and cardiotonic potential of Broom Creeper roots

The roots of Broom Creeper [*Cocculus hirsutus* (Linn.) Diels] possess many medicinal properties and local people use them in the treatment of diabetes. To confirm it and study its cardiotonic effect experiments have been conducted on alloxan-induced diabetic rats.

The cardiotonic activity was studied on normal and hypodynamic frog heart. Total alkaloid fraction prepared from methanol extract showed considerable hypoglycemic activity. The butanol fraction of methanol extract of roots has been found to have significant cardiotonic activity comparable to that of ouabain [Satyanarayana *et al*, *Indian J Pharm Sci*, 2001, 63(1), 30].

Blood clotting by methanolic extract of Shrubby Basil

In Nigeria, the rural communities stop bleeding by squeezing the fresh juice of Shrubby Basil (*Ocimum gratissimum* Linn.) leaves into the open wound. To confirm this folklore use, the effect of the leaf extract on the prothrombin time (PT) and activated partial thromboplastin time (APTT) of normal and Factor VIII-deficient plasma sample was examined by Edemeka and Ogwu of Usmanu Dan Fodiyo University, Nigeria. Blood coagulation effect of the methanolic extract of fresh leaves was tested on human blood samples. The extract exhibited a significant effect on clot formation in normal and Factor VIII-deficient plasma. There is a potential application in stopping hemophiliac bleeding [Edemeka & Ogwu, *J Herbs Spice Med Plant*, 2000, 7(4), 9].

Analgesic and anti-inflammatory effects of mango bark

In folk medicine mango stem bark is used for a wide variety of diseases. Chemically the bark contains triterpenes, flavonoids, phytosterols and polyphenols which are known to have cytotoxic, antineoplastic, antioxidant, anti-inflammatory and antibacterial activities. To establish its pharmacological effects, the analgesic and anti-inflammatory properties of bark extract were studied. On experimental animals analgesia has been determined using acetic acid-induced abdominal constriction and formaline-induced licking. Anti-inflammatory effects have been evaluated using carrageenan- and formaline-induced oedema. The extract (50-1000 mg/kg, p.o.) exhibited a potent and dose-dependent antinociceptive effect against acetic acid test in mice and 20-1000 mg/kg p.o. significantly inhibited oedema formation of both carrageenan- and formaline-induced oedema in rat, guinea-pigs and mice. The inhibitions are comparable to those produced by indomethacin and sodium naproxen p.o. (Garrido *et al*, *Phytother Res*, 2001, 15, 18).

Clinical trial of Palasha Pushpadi Churna in the management of diabetes mellitus

To develop safe, effective, cheap and readily available remedy for non-insulin dependent diabetes mellitus, clinical evaluation was done on *Palasha Pushpadi Churna*. This ayurvedic preparation in the form of powder contains dry flowers of *Butea monosperma* Kuntze, leaves of *Azadirachta indica* A. Juss., *Aegle marmelos* Corr. ex Roxb. and dry fruits of *Momordica charantia* Linn. This powder was given to patients in a dose of 5 g three times daily half an hour before meals with lukewarm water for a period of two months. Significant improvement in the clinical symptoms was found during the study. Fasting blood sugar level was decreased by 30.69% and post prandial blood sugar level was decreased by 25.15%. A decrease of 72.37% was also noted in the urinary sugar level [Prajapati *et al*, *J Res Ayurv Siddha*, 2000, 21(1-2), 1].

Antidiabetic activity of Black Plum seeds

Syzygium cumini (Linn.) Skeels (Hindi-Jamun) seeds extract (50% ethanol) injection (i.p. 20 mg) reduces blood glucose levels significantly after 3 and 6 hours. In alloxan induced diabetic animals blood glucose levels were depleted after 3 to 6 hours by 46 and 66% respectively. The results are comparable with insulin administration of 0.1 unit I.P. which lowered blood glucose levels by 61 and 78% after 3 and 6 hours, respectively [Purohit & Daradka, *Hamdard*, 2000, 43(4), 33].

Incense sticks ingredient possesses a medicinal alkaloid

Agarwood (*Aquilaria agallocha* Roxb.) (Hindi-Agar) wood contains liriodenine an alkaloid which is reported to have antibacterial and anti-fungal activity and significant cytotoxic activity against P388 lymphocytic leukaemia. The plant is also used in Indian system of medicine for several purposes. Additionally this is a famous ingredient in incense sticks. Liriodenine has been reported to exhibit significant anti-inflammatory effect in carrageenin induced paw oedema in rats and anti-arthritis activity in formaldehyde induced ankle joint arthritis and analgesic effect in the lower doses (25 mg/kg) [Ghosh *et al*, *J Res Ayurv Siddha*, 2000, 21(1-2), 49].

Coronary heart disease treatment by **Arjuna**

The bark of *Terminalia arjuna* (Roxb.) W. & A. has been in use for various medicinal purposes such as diuretic, anti-dysenteric, ulcers, biliousness, anaemia, asthma, tumours, leucoderma, expectorant and as cardiogenic. Recently clinical evaluation for the efficacy of the bark powder in cardiac disease has been done. Two capsules containing 500 mg bark powder were given daily in the morning after breakfast and 2 capsules in the evening after meal with milk. The treatment was continued for four months. It was observed that the *Arjuna* bark produced notable beneficial effects not only on coronary heart disease patients but also prevented the recurrence of heart attacks [Tripathi *et al*, *J Res Ayurv Siddha*, 2000, **21** (1-2), 37].

Wound healing and pain killer **Chaksini**

The drug, *Chaksini* (*Peristrophe bicalyculata* Nees) is mentioned in Unani classical books for its medicinal uses. The dried plant is beneficial in psychosomatic disorders and wound healing; it also possesses anti-venom activity. In medico-ethnobotanical literature the plant has also been mentioned as a good antidote for snake poison. Researchers at the Faculty of

Cytotoxic activity of Chinese Ginseng

The roots of *Panax ginseng* C.A. Meyer are one of the most important oriental crude drugs used for a psychiatric, neurologic and diabetes mellitus treatment. Researchers from Japan isolated sixteen acetylenic compounds from the roots of this plant and tested them for their cytotoxic activities on murine and human malignant cells *in vitro*. Some of the acetylenes showed more potent cytotoxicity than 5-fluorouracil (5-FU) and cisplatin (CDDP). Of the active compounds, panaxydol showed the most potent cytotoxic activity (IC_{50} : DT cells : 0.65 mM; 3T3 cells : 1.3 mM; L1210 cells : 0.19 mM).

The acetylenic compounds were tested for their cytotoxicity using murine and human malignant cell lines, Kirsten murine sarcoma virus-transformed NIH/3T3 (DT cells), mouse fibroblast NIH/3T3 cells, murine lymphoma L1210 cells, human cervix carcinoma HeLa cells, human bladder carcinoma T24 cells and human mammary carcinoma MCF7 cells *in vitro*. The results showed that the acetylenic compounds isolated from the root possesses cytotoxic effects on several cancer cells and could be lead compound for useful chemotherapeutic agents (Hirakura *et al*, *Natural Med*, 2000, **54**, 342).



Unani Medicine, AMU Aligarh carried out pharmacological screening for analgesic and anti-inflammatory effect of the drug.

The aqueous extract of the drug was studied for its anti-inflammatory effect by carrageenin oedema test and

compared with piroxicam as a standard. The test conducted on Eddy's hot plate showed that the drug possesses highly significant analgesia. The results clearly indicate that the aqueous extract has wound healing effect [Hoda *et al*, *Hamdard*, 2000, **43**(4), 40].

Wound healing power of Quince seeds mucilage

Quince, *Cydonia oblonga* Mill., is a tree cultivated in Punjab, Kashmir and Nilgiris. The tree bears golden yellow apple or pear shaped fruits. Iran is the major supplier of this fruit. In Iranian folk medicine its leaves are used as sedative and seeds are employed as emulsifying agent in the preparation of hair fixing lotions. Quince seeds contain about 20% mucilage which consists of arabinose, xylose and uronic acid derivatives and cellulose plus water soluble polysaccharides. To obtain mucilage, the seeds are separated from the fruits and dried and then are heated in distilled water.

For testing effect of mucilage on healing a wound in rabbits, mucilage was applied after mixing with eucerin cream. The control animals were applied eucerin containing 1 per cent phenytion. Healing in control animals was completed within 16 days whereas in experimental animals it was 13-16 days. Mixing 10% quince mucilage was found to be very effective. Thus in future this mucilage may be a potent natural healing agent for tissue injury [Hemmati & Mohammadian, *J Herbs Spice Med Plant*, 2000, 7(4), 41].

Antidiabetic activity of Black Plum seeds

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Anti-influenza compound from the fungus *Aspergillus terreus*

The scientists of Fujisawa Pharmaceutical Company Limited, Japan have isolated a novel anti-influenza agent FR198248 (hydroxyl benzaldehyde compound) from the cultured broth of *Aspergillus terreus* strain 13830. The compound showed *in vitro* antiviral activity against influenza A & B viruses in Madin-Darby Canine kidney cells. It also possesses potent *in vivo* anti-influenza activity in a murine model of respiratory tract infection. The fungal strain *A. terreus* 13830 was originally isolated from a soil sample collected in Mexico. The authors have published the taxonomy of the fungus and fermentation, isolation, purification, physico-chemical properties and biological activities of the compound FR 198248 (Nishihara *et al*, *J Antibiotics*, 2001, 54, 136).