



CHEMICAL COMPOSITION OF CLIMBERS USED FOR DIFFERENT DISEASES

R.S.Patel^{1*} and S. B. Dalicha²

¹Biology department, K.K.Shah Jarodwala Maninagar Science College,
Ahmedabad, Gujarat, India

²Shree R.P.Arts, Shree K.B.Commerce & Smt. B.C.J.Science College,
Khambhat, Anand, Gujarat, India

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ABSTRACT

Traditional systems of medicine continue to be widely practised on many accounts. Population rise, inadequate supply of drugs, prohibitive cost of treatments, side effects of several synthetic drugs and development of resistance to currently used drugs for infectious diseases have led to increased emphasis on the use of plant materials as a source of medicines for a wide variety of human ailments. Medicinal plants are considered as a rich resources of ingredients which can be used in drug development either pharmacopoeial, non-pharmacopoeial or synthetic drugs. A part from that, these plants play a critical role in the development of human cultures around the whole world. Moreover, some plants are considered as important source of nutrition and as a result of that they are recommended for their therapeutic values. Some of these plants include ginger, green tea, walnuts, aloe, pepper and turmeric etc. Some plants and their derivatives are considered as important source for active ingredients which are used in aspirin and toothpaste etc.

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INTRODUCTION

The term “**medicinal plant**” include various types of plants used in herbalism (“herbology” or “herbal medicine”). It is the use of plants for medicinal purposes, and the study of such uses. The word “**herb**” has been derived from the Latin word, “*herba*” and an old French word “*herbe*”. Now a days, herb refers to any part of the plant like fruit, seed, stem, bark, flower, leaf, stigma or a root, as well as a non-woody plant. These all parts contain active components of naturally synthesized chemicals. These chemical work with nutrients and fibers to form an intergrated part of immune system against various diseases and stress conditions. These chemical substances are called secondary metabolites. The most important of these bioactive groups of plants are alkaloids, terpenoids, tannins, saponins and phenolic compounds with specific activity of plant is desirable to know for the synthesis of compounds with specific activities to treat various health ailments and chronic diseases as well.

Among ancient civilisations, India has been known to be rich repository of medicinal plants. The forest in India is the principal repository of large number of medicinal and aromatic plants, which are largely collected as raw materials for manufacture of drugs and perfumery products.

*Corresponding author: **Dr.R.S.Patel**

Biology department, K.K.Shah Jarodwala Maninagar Science College, Ahmedabad, Gujarat, India

About 8,000 herbal remedies have been codified in AYUSH systems in INDIA. Ayurveda, Unani, Siddha and Folk (tribal) medicines are the major systems of indigenous medicines. Among these systems, Ayurveda and Unani Medicine are most developed and widely practised in India. Recently, WHO (World Health Organization) estimated that 80 percent of people worldwide rely on herbal medicines for some aspect of their primary health care needs. According to WHO, around 21,000 plant species have the potential for being used as medicinal plants.

As per data available over three-quarters of the world population relies mainly on plants and plant extracts for their health care needs. More than 30% of the entire plant species, at one time or other were used for medicinal purposes. It has been estimated, that in developed countries such as United States, plant drugs constitute as much as 25% of the total drugs, while in fast developing countries such as India and China, the contribution is as much as 80%. Thus, the economic importance of medicinal plants is much more to countries such as India than to rest of the world. These countries provide two third of the plants used in modern system of medicine and the health care system of rural population depend on indigenous systems of medicine. Medicinal plants such as *Aloe*, *Tulsi*, *Neem*, *Turmeric* and *Ginger* cure several common ailments. These are considered as home remedies in many parts of the country. It is known fact that lots of consumers are using Basil (*Tulsi*) for making medicines, black tea, in *pooja* and other activities in their day to day life.

Treatment with medicinal plants is considered very safe as there is no or minimal side effects. These remedies are in sync with nature, which is the biggest advantage. The golden fact is that, use of herbal treatments is independent of any age groups and the sexes.. Apart from the medicinal uses, herbs are also used in natural dye, pest control, food, perfume, tea and so on. In many countries different kinds of medicinal plants/ herbs are used to keep ants, flies, mice and flee away from homes and offices. Now a days medicinal herbs are important sources for pharmaceutical manufacturing. Recipes for the treatment of common ailments such as diarrhoea, constipation, hypertension, low sperm count, dysentery and weak penile erection, piles, coated tongue, menstrual disorders, bronchial asthma, leucorrhoea and fevers are given by the traditional medicine practitioners very effectively.

Over the past two decades, there has been a tremendous increase in the use of herbal medicine; however, there is still a significant lack of research data in this field. Therefore since 1999, WHO has published three volumes of the WHO monographs on selected medicinal plants.

METHODS

We interviewed participants in order to identify the most frequent diseases in the region and the medicinal plants used to treat them. The local physician was asked about the most frequent diseases, and ethnobotanical surveys to record medicinal plants and their uses, using semi-structured interviews and free listing, were conducted. We also interviewed four traditional healers to elicit more details on the preparation and the use of plants.

RESULTS

Out of 16 plant species are recorded for their chemical composition for curing various diseases. Species recorded as having medicinal use, belonging to 9 families and 10 genera, 10 species were used to treat the most frequent diseases. Plant medicines including opiates, cocaine and cannabis have both medical and recreational uses. Different countries have at various times made some uses of drugs illegal, partly on the basis of the risks involved in taking psychoactive drugs.

Plant medicines can cause adverse effects and even death, whether by side-effects of their active substances, by adulteration or contamination, by overdose, or by inappropriate prescription. Many such effects are known, while others remain to be explored scientifically. There is no reason to presume that because a product comes from nature it must be safe: the existence of powerful natural poisons like atropine and nicotine shows this to be untrue. Further, the high standards applied to conventional medicines do not always apply to plant medicines, and dose can vary widely depending on the growth conditions of plants: older plants may be much more toxic than young ones, for instance. Pharmacologically active plant extracts can interact with conventional drugs, both because they may provide an increased dose of similar compounds, and because some phytochemicals interfere with the body's systems that metabolise drugs in the liver including the cytochrome P450 system, making the drugs last longer in the body and have a more powerful cumulative effect. Plant medicines can be dangerous during pregnancy. Since plants may contain many different substances, plant extracts may have complex effects on the human body.

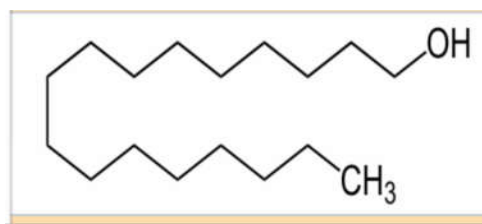
Madhunashi

Scientific Name: *Gymnema sylvestre*

Local Name: Madhunashi, Vakhandi

Family: Asclepiadaceae

Habit: Climber



Structure of Heptadecanol

Chemical Constituent : n-butanol, 1-Heptadecanol, stigmasterol glucoside, 1-Quercitol, 1-octadecanol, potassium nitrate, lupeol cinnamate, stigmasterol.

Medicinal Uses : Diabetes, weight loss, stimulating digestion, as a laxative and diuretic

Dodi

Scientific Name: *Leptadenia reticulata*

Local Name: Dodi, Kharkhodi, Hirandodi

Family: Asclepiadaceae

Habit: Climber



Chemical Constituent: β -Sitosterol, α -amyrin, β -amyrin, ferulic acid, luteolin, diosmetin, rutin, stigmasterol, hentriacontanol, A triterpene alcoholsimiarenol and apigenin.

Medicinal Uses: jivanti is stimulant, galactagogue and restorative. It is used as single drug in treatment of asthma. Jivanti is prescribed as a tonic in debility due to seminal discharges. It is recommended to treat general weakness,

cough, asthma, constipation, abdominal tumors, piles, Diarrhea and sperm disorders.

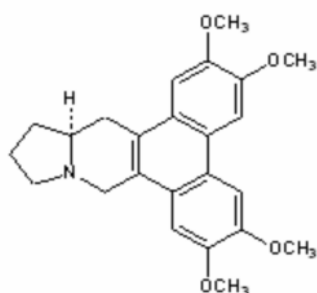
Dam -Ni -vel

Scientific Name: *Tylophora indica*

Local Name: Dam-ni-vel, Indian ipecac

Family: Asclepiadaceae

Habit: Climber



Structure of Tylophorine

Chemical Constituent: Tylophorine, tylophorinine, tylophorinidine, septidine, tyloindicine, Desmethyl-tylophorine, desmethyl, tylophorinine isotylocrebrine, γ -fagarine, skimmianine.

Medicinal Uses: Leucorrhoea, antidote, respiratory diseases, cough, asthma, whooping cough, bronchitis, cold, snake bite.

Nakh-vel

Scientific Name: *Dolichandra unguis cati*

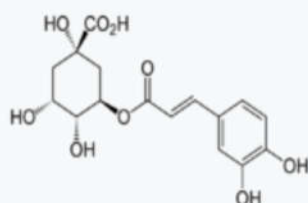
Local Name: Nakh-Vel, cat's claw

Family: Bignoniaceae

Habit: Climber



Chlorogenic acid



Chemical Constituent: Vicenin-2, quercitrin, chlorogenic acid, isochlorogenic acid, lupeol, beta-sitosterol, beta-sitosterylglycoside, allantoin and lapachol.

Medicinal Uses: Anti-inflammatory, anti-malarial and anti-venereal.

Samudra-Sosh

Scientific Name: *Argyrea speciosa*

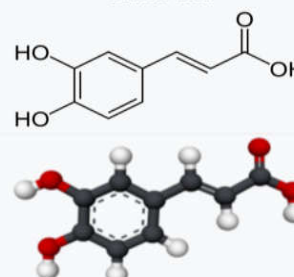
Local Name: Samudra-Sosh, Elephant care

Family: Convolvulaceae

Habit: Cimber



Caffeic acid



Chemical Constituent: Myristoleic, myristic, palmitic, linoleic, linolenic, oleic, stearic, nonadecanoic, eicosenoic, heneicosanoic-n-triacontanol, β -sitosterol, p-hydroxycinnamoyl, octadecanolate and caffeic acid, 1-triacontanol, tetradecanyl palmitate.

Medicinal Uses: Gleet, gonorrhoea, strangury, chronic ulcers, rheumatism and diseases of the nervous system.

Nasottar

Scientific Name: *Operculina turpethum*

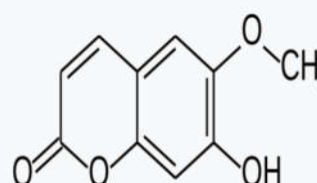
Local Name: Nasottar, Pithori, Indian jalap

Family: Convolvulaceae

Habit: Climber



Scopoletin



Chemical Constituent: B-Turpethins, scopoletin, turpethinic acids A, turpethin, scopoletin, coumarin. The root bark contains glycosidium resin which is 10%. It also contains a glycoside named turoethin that provides it the purgative action. Besides these it contains two glycosides, volatile oils and yellow colored substance.'

Medicinal Uses: Constipation, piles, jaundice, abdominal disorders, Gout, Rheumatoidarthritis, cough, asthma, inflammation, fever, obesity.

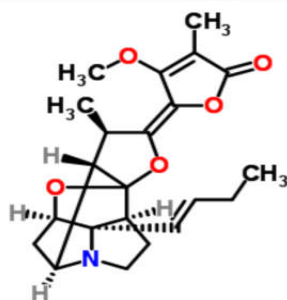
Satavari

Scientific Name: *Asparagus racemosus*

Local Name: Satavari

Family: Asparagaceae

Habit: Climber



Structure of Asparagine A

Chemical Constituent: Asparagine A, polycyclic alkaloid, steroidal saponins, shatavaroside A-B, saponin, filiasparoside C, Isoflavone 8-methoxy-5, 6,4' - thrihydroxyisoflavone 7-0-beta-D- glucopyranoside.

Medicinal Uses: Nervous disorders, dyspepsia, tumors, scalding of urine, throat infections, tuberculosis, cough, bronchitis and the herb is useful in pregnancy for threatened abortion. Asparagus proves to be an effective demulcent for the dry and inflamed membranes of the lungs, stomach, kidneys and sexual organs.

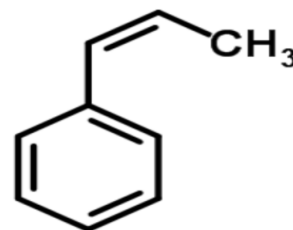
Nagarvel

Scientific Name: *Piper betle*

Local Name: Nagvel, Nagarvel, Betel leaf

Family: Piperaceae

Habit: Climber



Structure of Phenyl Propene

Chemical Constituent: Diketosteroid, viz. stigmast-4-en-3, 6-dione. Phenyl propene.

Medicinal Uses: Throat related problems, Diphtheria, Lymphadenopathy, back pain, impotency, erectile dysfunction, heart related problems, Rhinitis, Asthma, cough, fever, General body weakness.

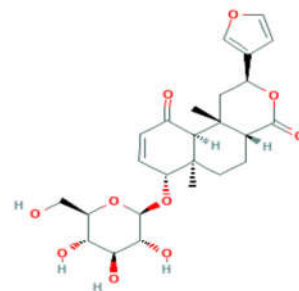
Gado

Scientific Name: *Tinospora cordifolia*

Local Name: Gado, Gulbel

Family: Menispermaceae

Habit: Climber



Structure of Tinosporaside

Chemical Constituent: columbin, tinosporaside, jatrorrhizine, palmatine, berberine, tembeterine, tinocordifolioside, phenylpropene disaccharides, choline, tinosporic acid, tinosporal and tinosporon.

Medicinal Uses: Anemia, leucorrhea, allergy, gonorrhoea, wounds, migraine, diabetes, ulcers, fever, HIV AIDS, Rheumatoid, arthritis, high cholesterol, peptic ulcer, Earache, dipsia, Arthritis, gout, constipation, hepatitis, Itching and acid reflux.

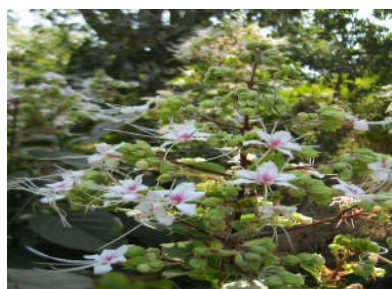
Marvadi Mogro

Scientific Name: *Clerodendrum splendens*

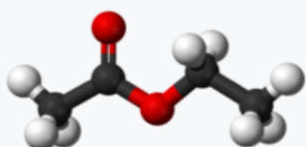
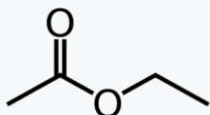
Local Name: Flaming glory bower, Marvadi Mogro

Family: Verbenaceae

Habit: Climber



Ethyl acetate



Structure of Ethyl acetate

Chemical Constituent: ether, ethyl acetate, 70% ethanolic, flavones apigenin and cyclohexyl thanoid cleroidicin F.

Medicinal Uses: This coarse textured evergreen climber is popular in warm, humid climates and can be used as an evergreen screen on a trellis or wall. The flowers are extremely showy and attractive to butterflies as well as people, encourage branching and more flowers by cutting back previous season's growth to a suitable pair of buds clerodendrum occurring in tropical and subtropical regions in Africa, Asia and the Western pacific.

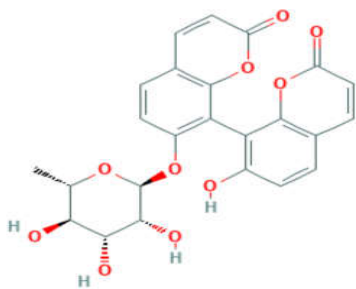
Silver Vine

Scientific Name: *Epipremnum aureum*

Local Name: Golden pothos, Silver Vine

Family: Areceae

Habit: Climber



Structure of Edgeworoside C

Chemical Constituent: edgeworoside C, edgeworin, tiliro-side, helichryoside, kaempferol, 2,4-dihydroxypheny-2-hydroxy-4-methoxybenzyl-ketone, ethyl caffeate, phthalic acid bis ester, noreugenin.

Medicinal Uses: anti-oxidant, anti-malarial, anti-cancerous, anti-tuberculosis, anti-arthritis, anti-bacterial.

Kachka

Scientific Name: *Caesalpinia Bonduc*

Local Name: Kachka, Crested Fever nut

Family: Caesalpiniaceae

Habit: Climbers



Structure of Diterpene

Chemical Constituent: diterpene, neocaesalpin P, diterpenoids neocaesalpin H, cordylane A, caesalpinin B, bonducellpin E, caesalpinolide A, 17- methylvouacapane-8-a- diene.

Medicinal Uses: Diabetes, ascites, ulcers, scrofula, abscess, asthma, liver diseases, paralysis, leprosy, skin diseases, styptic, purgative, constipation, diarrhea, joint pain and inflammation.

Chameli

Scientific Name: *Jasminum multiflorum*

Local Name: Chameli, Star jasmine

Family: Oleaceae

Habit: Climber



Structure of Benzyl linolenate

Chemical Constituent: Methyl N-formylanthranilate, δ -cadinene and benzyl linolenate.

Medicinal Uses : Anti-depressant, anti-septic, cicatrisant, aphrodisiac, expectorant, anti-spasmodic, galactogogue, sedative, parturient, uterine, removing intestinal worms and jaundice and venereal diseases, ulcers, vesicles, boils, skin diseases and eye disorders, breast tumours, cancer, making perfumes, creams, shampoo, soaps and incense.

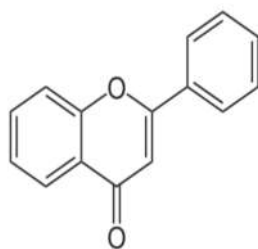
Madhvi lata

Scientific Name: *Hiptage benghalensis*

Local Name: Madhvilata, Ragatpit

Family: Malpighiaceae

Habit: Climber



Structure of flavonoids

Chemical Constituent: alkaloids, tannins, saponins, flavonoids, glycosides and phenols

Medicinal Uses: aromatic, bitter, acrid, astringent, refrigerant, vulnerary, expectorant, cardiotoxic, anti-inflammatory, insecticidal, burning, sensation, wounds, ulcers, cough and asthma.

Plant List

| Sr. No. | Scientific Name | Local Name | Family | Habit |
|---------|-------------------------|---------------|----------------|---------|
| 1 | Gymnema Sylvestre | Madhunashi | Asclepiadaceae | Climber |
| 2 | Leptadenia Reticulata | Dodi | Asclepiadaceae | Climber |
| 3 | Tylophora Indica | Dam-ni-vel | Asclepiadaceae | Climber |
| 4 | Dolichandra Unguis Cati | Nakh-Vel | Bignoniaceae | Climber |
| 5 | Argyreia Speciosa | Samudra-Sosh | Convolvulaceae | Climber |
| 6 | Operculina Turpethum | Nasottar | Convolvulaceae | Climber |
| 7 | Asparagus Racemosus | Satavari | Asparagaceae | Climber |
| 8 | Piper Betle | Nagvel | Piperaceae | Climber |
| 9 | Tinospora Cordifolia | Gado | Menispermaceae | Climber |
| 10 | Clerodendrum Splendens | Marvadi Mogro | Verbenaceae | Climber |
| 11 | Epipremnum Aureum | Silver Vine | Areceae | Climber |
| 12 | Caesalpinia Bonduc | Kachka | Caesalpinaceae | Climber |
| 13 | Jasminum Multiflorum | Chameli | Oleaceae | Climber |
| 14 | Hiptage Benghalensis | Madhvilata | Malpighiaceae | Climber |

CONCLUSION

The preliminary quantitative analysis and screening of the crude powder of the above mentioned medicinal plants is done to assess the presence of bioactive components.

The presence of various essential chemical components such as alkaloids, flavonoids and saponins and tannis are important and are responsible principles for medicinal values of the respective plant. The curative properties of medicinal plants are perhaps due to presence of various secondary metabolites, thus they serve as natural antibiotics, which help the body to fight infections and microbial invasion, protection against allergies, inflammation, free radicals, platelet aggregation, microbes, ulcers, hepatoxins, viruses and tumors.

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