

## MEDICINAL VALUE OF [*Morus alba*] MULBERRY PLANT

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Man's dependence on plants for his existence dates back to the beginning of the human race. In the early days, he had only limited needs like food, shelter and clothing but with the advancement of civilization, his requirements also grew. The present day man depends heavily on a very large numbers of plants and animal produced to meet his daily needs. Traditional medicines are used by about 60% of the worlds population these are not only used for primary health cure not just in rural areas in developing countries, but also in developed countries as well as where modern medicines are predominantly used. Chattisgarh is a remarkable place, not only because of the tribal population and dense forest, but also having a lot of rare and useful natural resources including some rare species of medicinal plants which are used for curing different kinds of diseases. Mulberry is a deep-rooted perennial plant with highly branching root and shoot systems Mulberry belongs to the family *moraceae*. In Japan, more than 1000 varieties are stored and in India at the CSTR Mysore, there are about 400 mulberry varieties of which 85 are indigenous, 114 are exotic origin. Some of the important medicinal values of mulberry plants are it contains different chemical of medicinal value in leaf fruit stem and root portions.

Mulberry can grow both in the tropics and in the temperate regions. It can be cultivated in different soil types. It can be raised both in rain-fed and irrigated conditions. It is comparatively resistant to environmental fluctuations and is relatively free from pests and diseases. The quality and quantity of leaves harvested from mulberry plantation for silkworm feeding depends upon the availability of soil water. The nutritive value of leaf changes according to the photosynthetic and respiratory activities of the leaf. Mulberry cultivation and sericulture have been practiced for a very long time. But in the past mulberry was cultivated more for its medicinal use than for rearing of silkworms alone.

**Medicinal value of mulberry leaf-** The leaves are simple alternate, stipule and petiolate. Leaf may be glossy or scabrous in texture leaf apex may be long tailed acute or double acute in some countries, mul-

berry leaves are directly used in preparing the tea or these together with the mulberry roots and stem are boiled to prepare a both which is effective in lowering down the blood pressure. In Cambodia, mulberry leaves are used in the treatment of conjunctivitis. Mulberry leaves contain variety of chemical such as phenylalanine, leucine, valine, tyrosine, proline, alanine, glutamic acid, glycine, serine, arginine, aspartic acid, ascorbic acid, carotene, vitamin B, folic acid, folinic acid, vitamin D, Cystine, threonine, sarcosine, r-aminobutyric acid, n-butanol,  $\beta$ -hexenol, methyl ethyl acetaldehyde, n-butyl aldehyde, iso-butyl aldehyde, iso-butylaldehyde, valeraldehyde, hexaldehyde, pipercolic acid, acetone, methyl ethyl ketone, methyl-hexyl ketone, propionic acid, isobutyric acid, besides tartaric acid, succinic acid and calcium malate. Accordingly, leaves of mulberry have great medicinal value. Mulberry leaves have been found effective in lowering the blood-sugar level and arterial pressure. High performance liquid chromatography reveals the presence of aromatic amino acids in the leaves of *morus alba*. Various biogenic amines are detected at picogram level which include dopamine, dihydroxyphenyl acetic acid, hydroxyphenyl acetic acid, L-DOPA, Norepinephrine, Tyramine and Netanephrine. Dopamine is found at high concentrations [54.37 mg./gm. dry powder]. These are also used in gargles for curing the throat inflammation. Moreover, the aqueous and alkali extract of mulberry leaves are active against gram-positive bacteria and yeasts. Some rural people as food because of being highly nutritious also use mulberry leaves. Several compounds of calcium, phosphorus, silicon, manganese, magnesium, iron, copper, zinc and vitamin are found in abundance in mulberry leaves. In view of this, it has been seen that mulberry leaves provide excellent material for preparing paratha, pakoda, baji as compared to spinach. As like pea, cucumber and drumstick etc. man also now consumes mulberry leaves as vegetable. The green leaves of various plants are more nutritive, mulberry leaves, satisfy the dietary requirement of human beings and contain all the elements required for the body.

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**Medicinal value of Fruits:** The fruit of mulberry is a multiple one, as all the flower of the inflorescence give rise to a single fruit. The fruit is green but changes to purplish through various shades of pink, red, brown, etc. due to certain water contained in the juice. It is also good for brain heart, spleen and helps curing diarrhea and intestinal ulcers. It is considered as a laxative and oral juice administration good drink during convalescence after a febrile illness. Mulberry fruit is well known as esteemed dessert fruit and having high source of vitamin C which is commonly used for the jams, Jellys cooling beverages and wines. The fruit has special taste and attracts women who are on their family way. This is due to vitamin C, which gives a sour taste and makes them chew the fruit repeatedly. Contains moisture [85percent] proteins [0.7percent], fats [0.4percent], carbohydrates [12.2percent], calcium [80mg, phosphorous [20mg, iron [2.6mg, carotene [vitamin A, 60IU], thiamin [58g], nicotinic acid [0.2ug], riboflavin [2ug] and ascorbic acid [10ug] per 100 g. Besides, these, it contains malic acid, citric acid, pectin, mucilage and coloring matter. Extracts of fruits of *Morus laevigata* contains high concentration of hydroxyproline.

**Medicinal value of Stem:** Among various substances extracted from mulberry shoots, polyphenols or its derivatives have been seen to increase the fur growth in rabbits and sheep. Some of the polysaccharides including pectin and glucose are used in cosmetics for making hair and skin supple. While diverse uses of mulberry shoots have been demonstrated by various studies, details on the use of various substances present in the shoots are yet to come out. Wood contains tannin, extracts prepared from wood [tannin content 0.32%] that is suitable for tanning and coloring purpose and bark is used as purgative and vermifuge. Mulberry being a member of *moraceae*, which is specialized for their latex producing capacity, has the property of healing the wounds and injuries. It can be used as dermal ointment.

**Medicinal value of Root-**Mulberry is a deep-rooted perennial plant its root system is very well developed through the growth and spread of the root depend upon the texture of the soil the root shows the

same structure as in other dicotyledonous. Root the bark of root is bitter and possesses cathartic, antihelmintic and stringent properties. It is also used as restorative tonic and as remedy for nervous disorders in China. An alkaloid deoxyjirimycin [DNJ] has been extracted from the root bark of the black mulberry, *M. nigra*, which resembles glucose and interferes with the synthesis of sugar chains. The chemical hinders the addition of sugar molecules to the outer coat of the human immunodeficiency virus. It has been observed that the surface glycoprotein of HIV is rich in sugar chain and is involved in the budding activity of the virus on and from a cell. Although the alkaloid's [DNJ'S] activity at the cellular level is yet to be analyzed, it is crystal clear that DNJ inhibits the enzymes glycosidase, responsible for trimming the sugar chains on glycoproteins. In a sense, DNJ hinders the docking of HIV on the human cell and hence makes the attack futile thus DNJ, easy to synthesize and seems to be a promise as a potential medicine against AIDS. [RAY, 1989]. The GD searle Pharmaceuticals Company has taken keen interest in DNJ and is working closely with chemists at Oxford and Cambridge. Butyl-DNJ is reported more active in treating AIDS. [Ray 1989, Tewary and Rao 1990] Mulberry root juice has the capacity of agglutinating the blood. The medicine prepared from the root is called *Glucosidae* which can be administered to the patients suffering from high blood pressure. Japanese have already isolated a hormone called *Moranoline* which contains 5 carbon atoms and one nitrogen atom. Its use as medicine is yet to be confirmed.

**Conclusion:** mulberry contains different chemicals of medicinal value in leaf, fruit, stem, seed and root portions. The chemical substances are normally extracted in to aqueous media in the form decoctions and concoctions. The knowledge of medicinal plants is species specific and restricted to a few individuals which differs from ancient system and due to lack of written documentation, many prime remedies are vanishing with generation. The mulberry cultivation would be helpful or encouraging for making index of medicinal plants of the region

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