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## Medicinal Value of Cotton

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Cotton is one of the most important commercial crops of the world valued for its fibre, oil and other by-products. The main product of the cotton plant is fibres - their qualitative characteristics have been valued and analyzed over many centuries and multipurpose crop having many economic uses. It belongs to the genus *Gossypium* under the family *Malvaceae*. The genus comprises 50 species, only four of which are cultivated. Out of these four species, *G. arboreum* L. and *G. herbaceum* L. are diploids ( $2n=26$ ), and are called Old world cotton while the other two species *G. hirsutum* L. and *G. barbadense* L. are tetraploids ( $2n=52$ ) and are known as New world cotton. Today, *G. hirsutum* and *G. barbadense* are the major cultivated cotton species, with *G. hirsutum* accounting for 90% of world production. *G. barbadense* represents approximately 5% of world fibre production. But here, this paper is useful to pharmaceutical universities and industries for more detailed investigation in the aspect of its important medicinal constituents and this plant is also useful as remedy for various type of disease hence the farmers will be advise to cultivate this plant at large scale to have dual benefits such as fibres and medicinal uses.

The cotton plant contains terpenoid aldehydes in an oily water soluble matrix, which forms an essential oil known as “gossypol”. It is toxic to non-ruminant mammals, birds, and many insects and microbes, thus providing a constitutive as well as inducible defense against herbivory and microbial attack. During the past few years, gossypol has attracted much attention especially due to its antifertility<sup>1</sup>, antiparasitic<sup>2</sup> and anti-HIV properties<sup>3</sup>. Seed may contain as much as 10% gossypol<sup>4</sup>. Cotton seed is demulcent, laxative expectorant and galactagogue, it is used as a nervine tonic in headaches and brain affections and decoctions of seed are given in dysentery and intermittent fevers. Indians used cotton seeds for treatment of coughs, constipation and gonorrhoea. Snake bites and scorpion stings can be treated using infusions or mixtures of the seeds and leaves. Ayurvedic, Siddha and Unani physicians use cotton to treat blood circulation, ear problems, colds, diarrhea and gout. Information on processing of cottonseed and its major products (oil, meal, hulls and linters) and their composition including the key food and feed nutrients, toxins and anti-nutrients have been summarized by the OECD<sup>5</sup>. Extracts of cotton plants have been used medicinally<sup>6</sup> because of its several physiological effects, the medical potential of gossypol is being investigated<sup>7</sup>, and it has been used as a male contraceptive<sup>8</sup>. The seeds, even though extensively and intensively used worldwide as well, tend to be regarded as a secondary product or byproduct. Large quantities of gossypol can be anti-nutritional, toxic and adverse effects on human and animal health<sup>9</sup>. The gossypol and cyclopropenoid fatty acids (CPFAs) in cottonseed limit its use as a protein supplement in animal feed. Ruminants are less affected because these compounds are detoxified by digestion in the rumen<sup>10</sup>. Cottonseed as a stockfeed is limited to a relatively small proportion of the diet, and must be introduced gradually to avoid the potentially toxic effects<sup>11</sup>.

Processed cotton fibre contains over 99% cellulose<sup>12,13</sup> and is used widely in pharmaceutical and medical applications because of its low capacity to cause irritation. This tropical plant has hypertensive (blood pressure lowering) effect and anti fungal properties. It is also one of the safest and most certain herbal abortifacients (substance that causes pregnancy to end prematurely and causes an abortion). Other uses are as an

emmenagogue (menstruation stimulant), a substitute for ergot (fungus that procedure certain alkaloids used in medicine) and to check hemorrhage (bleeding). Cotton has been used by women for menstrual complaints such as amenorrhea, dysmenorrhea, irregular and painful or profuse menstrual bleeding. They also use it for climacteric complaints and poor lactation, as an oxytocic and expel placenta afterbirth. Some traditional uses include gastrointestinal complaints such as nausea, diarrhea and dysentery as well as others such as urethritis, pain, fever, headache and hemorrhage. The plant was cultivated to produce cotton fiber for clothing.

Cotton root bark, the inner bark, and cotton seeds are all used as herbal remedies. While the seeds also served as a food, cotton root bark has been known for centuries as a "female medicine." Cotton root bark is also taken for difficulties experienced during menopause. Furthermore, cotton root bark is currently used as a male contraceptive in China because it's said to immobilize the sperm. Cotton root bark supposedly blocks production of sperm without affecting a man's potency. In addition, cotton root bark still has a reputation as an aphrodisiac. Evidence of this property of the herb, however, is anecdotal. The root bark encourages the blood to clot and secretion of breast milk.

Cotton also finds specially application in hygienic uses. Most notably, the fibre is used to manufacture hydrophilic cotton (cotton wool), compress, gauze bandages, tampons or sanitary towels, and cotton swabs. Cotton fibres used in this way are often impregnated with medication such as zinc and calamine or anti-microbial ointments. Some cotton dressings are mixed with other fibers such as viscose, which helps to absorb exudates from wounds. Absorbent cotton gauze may be used to pack cavities like the sinuses or throat following surgery and also be used to cleanse and swab wounds or areas of the skin prior to surgery, or to apply medication to the skin. Cotton bandages, which is used to give support to strains, sprains, splints and to varicose veins.

Cotton is also used in the manufacture of some types of adhesive tape that may be used to secure bandages. In this field, the most suitable cotton variety is the species *Gossypium herbaceum* with short-staple thick fibres. Cotton leaves used against parasites and eliminate lymphatic filariasis. The blood pressure lowering effect of the decoction of *G. hirsutum* leaves has been reported. The juice of the leaves is useful for dysentery. The leaves are applied with oil as plaster to gouty joints. The petals of cotton flowers are used as vegetable in some parts of Madras. Syrup of cotton flowers is given in hypochondriasis and a poultice made of them is applied to burns and scalds. Flower buds are used by the Amerindians for earache. They serve well in the form of species and potpourris. In view of the growing interest in these importances, there is a need to screening, determination and quantification of medicinally compounds in vegetative parts of *Gossypium* species for health benefits of human beings.

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