Medicinal values of Cissus quadrangularis Linn. : A Review

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Abstract : Cissus quadrangularis Linn. is a medicinal plant belonging to family Vitaceae. The plant is probably native to India and Srilanka, but also found in Africa, Arabia and South East Asia. In India the plant is reported from Bihar, Odessa, West Bengal, Assam, Maharashtra, Goa, Andhra Pradesh, Kerala, Karnataka, Tamilnadu, Daman and Lakshadweep islands. The plant commonly known as Hadjod in Hindi and Kandvel in Marathi. The plant is perennial succulent climber having quadrangular stem with nodes and internodes. Phytochemical studies on showed that the plant contains triterpenes including α- and β- amyrins, β- sitosterol, ketosteroids, phenols, tannins, carotene and vitamin C. Several other constituents such as flavonoids quercetin and kampferol, and stilbene derivatives, quadrangularins and many others e.g. resveratol, piceatanon, pallidol, and phytosterols have been isolated from plant. Stem extract contains a high percentage of calcium ions and phosphorus, both essential for bone growth. Whole plant and plant parts are used in various medicinal formulations. The plant is traditionally known for its bone healing property. It is also used in cure of osteoporosis, jaundice, Gonorrhoea, Syphilis, bleeding, epistaxis, menorrhagia, anorexia, indigestion, gastritis, worm infection, diarrhoea, malabsorption, diseases in bowels, haemorrhoids, anaemia, jaundice, ascites, hernia, bronchial asthma, cough, whooping-cough, fever, oedema, urine retention, earache, otorrhea, deafness, toothache, pain, diseases. It also shows antidiabetic properties and can be used to reduce weight. Studies have proved antimicrobial activities against various fungi and bacteria.

Key words: Cissus quadrangularis, medicinal values, bone healing.

INTRODUCTION

Plants play very important role in human life. They provide food, shelter, clothes and act as rich source of medicines. According to World Health Organization over 80% of world's population relies on traditional forms of medicines obtained from plants and is dependent on these medicines for primary health care. Charaksamhita (1000-100AD) has recorded over 2000 vegetative remedies against various diseases.

Cissus quadrangularis Linn. belonging to family Vitaceae is perennial climber. The plant is native to India, Srilanka and South Africa. In India it is found in Bihar, Odessa, West Bengal, Assam, Maharashtra, Goa, Andhra Pradesh, Kerala, Karnataka, Tamilnadu, Daman and Lakshadweep islands (Nazeen F.,2013).It is found in hotter parts of India and cultivated by cutting method. Plant occurs as pieces of varying lengths; stem is quadrangular, 4- winged, having nodes and internodes. Internodes are 4-15 cm long and 1-2 cm thick. The stem surface is smooth, glabrous, and green in colour with brown-red tinge at angular portions. Leaves are simple 2.5-5 cm long, broadly ovate or reniform, sometimes 3-7 lobed, denticulate, glabrous, cordate, rounded, truncate or cuneate at the base; petioles 6-12mm long; stipules small, broadly ovate, obtuse. Flowers are in shortly peduncle cymes with spreading umbellate branches. Calyx is cup shaped, truncate or very obscurely lobed. Petals are 4, ovate-oblong, short, stout. Berry is obovoid or globose, approximately 6mm long, apiculate, red when ripe, single seeded. (Shah U. 2011).

Bone healing properties:

C.quadrangularis is known as "bone setter" as it is has ability to join bones. Clinical studies revealed that external application of the paste of C. quadrangularis showed earlier formation of collagen fibres leading to earlier calcification and callus formation. (Udapa K N, 1962). The plant contains phytosterols which stimulate uptake of calcium, sulphur and other mineral uptake and increase bone healing process.

Anti- osteoporotic activity:

Estrogen deficiency is important risk factor during pathogenesis in osteoporosis. Estrogen influences bone loss either directly by binding to receptors on bones or indirectly by affecting calcium binding hormones (Bhagat K. P., et al, 2009).

Antioxidant Activity:

Ethanolic, Methanolic and petroleum ether extracts tested on various free radical producing chemicals such as DPPH and hydrogen peroxide. The extract showed free radical scavenging activity (Nitur N. et. al., 2015).

Antidiabetic Activity:

Diabetes is the world's fastest growing metabolic disorder. The study in rats showed that an ethanolic extract of C. quadrangularis effectively prevent the increase in serum level glucose level without causing a hypoglycaemic state. The effect may due to restoration of the delayed insulin response. (Chaudhari R. L. et. al. 2013).

Antibacterial and Antifungal Activity:

Methanol extract of C. quadrangularis shoe high antibacterial activity against gram- negative and gram- positive bacteria such as E. coli, Pseudomonas and fungi like Penicillium niger and Candida when tested in vitro (Vijayalaxmi A., 2013).

Weight Loss Activity:

The phytosterol and fiber extracts of C. quadrangularis have anti-lipase and anorexiant properties that reduce the absorption of dietary fats and enhance satiation by increasing serum serotonin levels. Administration of Cissus formulation efficiently controls and lowers triglycerides concentrations, total cholesterols, LDL- cholesterols and fasting blood glucose. This will help reduce weight and metabolic syndromes in obese people (Oben J. et. al., 2006).

Anti-inflammatory Activity:

The plant extract acts as anti-inflammatory agent by binding with COX-2 protein which is involved in inflammatory pain found in central nervous system and in inflammatory cell.

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