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Review article

Ethno medicinal, pharmacological properties and chemistry of Fabaceae family

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ABSTRACT

Different medicinal plants and their medicinal values are widely used for various ailments throughout the world. Various chemical constituents isolated and characterized from Fabaceae plant species are described. These included alkaloids, flavonoids, terpenoids, Triterpenoids, phenols, stilbenes and many others. Some important biological and pharmacological activities reported from various parts of plant species and from these plants, the isolated constituents demonstrated analgecis, CNS depressant, hypoglycaemic, antioxidant, antimicrobial and hepatoprotective activities. Experiments depicting above said potentials has been conducted on Fabaceae family plants. Among the Fabaceae family plants, *Cajanus cajan* has very important medicinal value. The review article will therefore give a critical overview of different phytochemicals and various medicinal properties belonging mainly to plant *Cajanus cajan*.

Keywords: Fabaceae, Alkaloids, Flavonoids, Stilbenes, Terpinoides,

INTRODUCTION

Cajanus cajan Linn which is synonymous to C*ajanus indicus* is given different names like Red Gram. Pigeon Pea, Congo Pea and "Tur" by the local people of India. The plant is an erect shrub which grows height of 1.5 to 3 meters with many branches. The leaves are pinnately trifoliate and the leaflets are oblong-lanceolate and entire. The plant has a deep taproot with lateral roots and nodulated fine roots. The legumes, which are flattened, somewhat constricted between seeds, and 4 to 8 cm long, are mottled bronze-purple when immature, drying to brown. The species *Cajanus cajan Linn* belonging to family fabaceae grows widely inmost part of India. The plant is usually cultivated and the gram, a rich source of protein is widely used in India. The leaves are traditionally used as astringent, diuretic laxative, anti-inflammatory and for oral ulcers. Chemical investigations and pharmacological studies indicated the main components in pigeon pea leaves possessing the beneficial efficacies on human health are classified as, flavanoids. Out of them, flavonoids and stilbenes are the major constituents. They also contain saponins, conspicuous amount of tannins, and moderate quantities of reducing sugars, resins and terpenoids. In India, the young leaves are applied to sores. Indochinese claim that powdered leaves help expel bladder stones. Salted leaf juice is taken for jaundice. Leaves are also used for toothache, mouthwash, sore gums, child-delivery, and dysentery. Scorched seed, added to coffee, are said to alleviate headache and vertigo [1, 2].

Geographical Distribution

It is one of the most important edible vegetable in tropical countries and cultivated in India, East Asia, Africa, Latin America and The Philippines. It is the second most important pulse in India. Cultivation is mainly confined to the states of Maharashtra, Uttar Pradesh, Madhya Pradesh, Gujarat, Karnataka, Andhra Pradesh and Orissa. The major producer is India contributing about 90% of world production. Its altitude range is 1250 m in Hawaii, 0-3000 m in India and Columbia. It is essentially a plant of the semi-dry lowlands but has wide adaptability (7). It is widely cultivated in Bangladesh for its edible seeds and is locally known as arhar [3, 4].

Phytoconstituents

Chemical constituent explorations have indicated that *C. cajan* leaves are rich in flavonoids and stilbenes. Chemical studies reveal 2' -2' methyl cajanone, 2' -hydroxy genistein, isoflavones, cajanin, and cahanones etc., which impart antioxidant properties [5, 6].

Enzyme assisted extraction of luteolin and apigenin from pigeonpea leaves was investigated with cellulase, beta-glucosidase and pectinase. The oil of *Cajanus cajan* is comprised of sesquiterpenes (92.5%, 81.2% and 94.3% respectively in the leaves, stem and seeds) [7, 8].

Ethnopharmacology

In Chinese folk medicine, pigeon pea leaves are used to staunch blood, as an analgesic and to kill parasites. In some parts of Tamil Nadu, India, the leaf, seeds and young stems are used to cure gingivitis, stomatitis and as a toothbrushLeaves and seeds a applied as poultice over the breast to induce lactation. The plant is considered as antidiabetic in Indian traditional medicine like Ayurveda [9, 10].

Pharmacological Applications

During the last few decades a large number of compounds have been isolated from *C. cajan* and some of them have got excellent biological activities. Different parts of *C. cajan* have been utilized for their biological activities since time immemorial and some of them have experimental grounds for their acceptance. Analgesic and CNS depressant potential of plant is documented by Sandeep

B. et.al stating that it's may be attributed to increase in GABA concentration in brain. Article also suggested that it may due to suppression of prostaglandins and bradykinins that are main chemical mediators involved in pain perceptions in humans. The review is based on research work on the said plant establishing its use as antiepileptic drug through CNS models i.e picrotoxin and pentylenetetrazol induced seizures in mice [11].

CONCLUSION

The family Fabaceae comprises a number of medicinal plants, some important plants has been discussed in the above section. A number of secondary metabolites viz.- alkaloids, flavonoids, phytosterols, terpenoids, glycolsides, fatty acids different types of proteins and many other metabolites are present in different plant parts. It becomes necessary to study the pharmacognostic characteristic of the plant before its use in the field of research and also in pharmaceutical formulation. Moreover it also helps in distinction from other allied species and adulterants. Recently there has been a shift in universal trend from synthetic to herbal medicine, which we can say 'Return to Nature'. Medicinal plants have been known for millennia and are highly esteemed all over the world as a rich source of therapeutic agents for the prevention of diseases and ailments. GABA is the major inhibitory neurotransmitter in the brain while glutamic acid is an excitatory neurotransmitter in the brain. The inhibition of GABA neurotransmitter and the enhancement of the action of glutamic acid have been shown to be the underlying factors in epilepsy. Review is based on study that established that the methanol extract of the leaves of C. cajan has protective effect against seizures induced by pentylenetetrazole and picrotoxin; and also delayed the latency of the seizuresn [13].

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