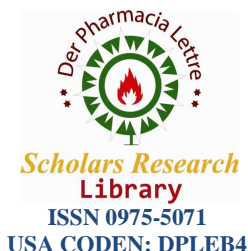




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***Cassia fistula* Linn: Evidence for pharmaceutical applications**

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ABSTRACT

Cassia fistula Linn is a flowering plant in the family Fabaceae, native to the Indian subcontinent and adjacent regions of Southeast Asia. The aim of this study is to overview its therapeutic effects than its nutritive and industrial effects. This review article was carried out by searching studies in PubMed, Medline, Web of Science, and IranMedex databases up to 2016. totally, of 100 found articles, 40 articles were included. The search terms were “*Cassia fistula* Linn”, “therapeutic”, “pharmacological”, pharmaceutical. Various studies have shown that *Cassia fistula* Linn has chronic fatigue syndrome effects, Diuretic and antioxidant activities, oxidative stress effects, Hypoglycemic Effects, Hypolipidemic and antioxidant effects, Antimicrobial effects. *Cassia fistula* Linn possess lots of pharmaceutical applications. More studies about the other useful and unknown properties of this multipurpose plant.

Keywords: *Cassia fistula* Linn, therapeutic, pharmacological, pharmaceutical

INTRODUCTION

It is proved that herbal medicine is effective in the treatment of many diseases [1-10]. *Cassia fistula*, known as the golden rain tree and by other names, is a flowering plant in the family Fabaceae. The species is native to the Indian subcontinent and adjacent regions of Southeast Asia. It ranges from southern Pakistan eastward throughout India to Myanmar and Thailand and south to Sri Lanka [7, 11]. In ancient Tamil literature, it is called [kondrai] and is closely associated with the Mullai [forest] region of Sangam landscape. It is the national tree of Thailand, and its flower is Thailand's national flower. It is also the state flower of Kerala in India and of immense importance amongst the Malayali population. It is a popular ornamental plant and is also used in herbal medicine [12, 13].

Cassia Fistula [Golden Shower tree / Konnappoo] inside forest in eastern parts of Kerala state in India [14]. The golden shower tree is a medium-sized tree, growing to 10–20 m [33–66 ft] tall with fast growth. The leaves are deciduous, 15–60 cm [5.9–23.6 in] long, and pinnate with three to eight pairs of leaflets, each leaflet 7–21 cm [2.8–8.3 in] long and 4–9 cm [1.6–3.5 in] broad. The flowers are produced in pendulous racemes 20–40 cm [7.9–15.7 in] long, each flower 4–7 cm [1.6–2.8 in] diameter with five yellow petals of equal size and shape. The fruit is a legume, 30–60 cm [12–24 in] long and 1.5–2.5 centimetres [0.59–0.98 in] broad, with a pungent odor and containing several seeds. The tree has strong and very durable wood, and has been used to construct "AhalaKanuwa", a place at Adams Peak, Sri Lanka, which is made of *Cassia fistula* [ahala, ehela, oraehaela, ඇහැලු in Sinhala] heartwood [15-18].

In Ayurvedic medicine, the golden shower tree is known as aragvaha, meaning "disease killer". The fruit pulp is considered a purgative and self-medication or any use without medical supervision is strongly advised against in Ayurvedic texts. Though it has been used in herbalism for millennia, little research has been conducted in modern times[19-34].

Chronic fatigue syndrome

The effect of ethanolic extract of fruit pulp of *C. fistula* Linn. [EECF] was evaluated on forced swimming induced chronic fatigue syndrome [CFS]. Treatment with EECF resulted in significant reduction in the duration of immobility, reduced anxiety and increased loco-motor activity. Malondialdehyde level was also reduced and catalase level was increased in the extract treated group and standard group compared to stress control group. The study indicates that EECF has protective effect against experimentally induced CFS [35].

Diuretic and antioxidant activities

The putative diuretic and antioxidant properties of *Cassia occidentalis* [*C. occidentalis*] leaves' aqueous extract was assessed. Result strongly suggest that *C. occidentalis* aqueous extract has diuretic and antioxidant activities, and deserves further studies considering the potential for the treatment of hypertension [36].

Antidiabetic activity along with renal complications and antioxidant potential of alcoholic extracts of stem barks of these plants was evaluated. Alcoholic extract of stem bark of both plants showed significant antioxidant activity in DPPH, nitric oxide and hydroxyl radical induced in vitro assay methods. It can be concluded from the study that *Tamarindus indica* and *Cassia fistula* stem barks possess blood glucose lowering effect along with antioxidant effect and protective effect on renal complications associated with hyperglycemia [37].

Hypoglycemic Effects

The effective antihyperglycemic extracts and fraction were tested for their hypoglycemic activity at two dose levels, 200 and 400 mg/kg, respectively. Result showed that No activity was found in the petroleum ether extract of the plant. Comparatively, the water-soluble fraction of ethanol extract was found to be more effective than the ethanol extract, and the activity was comparable with that of the standard, glibenclamide [5 mg/kg][38].

The hypolipidemic and antioxidant effects of ethanol extract of *C. fistula* fruit [CFE] in high-fat diet [HFD] induced hyperlipidemia in mice was investigated. *C. fistula* fruit demonstrated hypolipidemic and antioxidant properties in vivo and the results corroborate the use of this plant in traditional medicine for cardiac ailments[39].

Antimicrobial

Biodiesel production from a low cost, abundant, non-edible lignocellulosic biomass from aqueous extract of *Cassia fistula* L. (CAE) fruit pulp was explored. The FAME profile obtained revealed palmitic acid (C16:0) 43.06%, stearic acid (C18:0) 28.74%, and oleic acid (C18:1) 17.34% as major fatty acids. High saturated fatty acids content (72.58%) can be blended with high PUFA feedstocks to make it an industrially viable renewable energy product(40).

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