

**MEDICINAL VALUES OF AVARAM (*CASSIA AURICULATA* LINN.): A REVIEW**V.JOY<sup>1\*</sup>, M.PAUL JOHN PETER<sup>1</sup>, J.YESU RAJ<sup>1\*</sup>, RAMESH<sup>2</sup>

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**ABSTRACT**

In recent times, focus on plant research has increased all over the world and a large body of evidence has collected to show immense potential of medicinal plants used in various traditional systems. Over the last few years, researchers have aimed at identifying and validating plant derived substances for the treatment of various diseases. Similarly it has been already proved that various parts of plants such as Leaves, fruits, seeds etc. provide health and nutrition promoting compounds in human diet. The *Cassia auriculata* Linn. is another Indian plant, which has enormous traditional uses against various diseases. The present review aims to compile medicinal values of *Cassia auriculata* Linn. generated through the research activity using modern scientific approaches and innovative scientific tools.

**Keywords:** *Cassia auriculata* Linn., Pharmacological Activities, Medicinal Values.

**INTRODUCTION**

The use of Plants with pharmaceutical properties has received increased interest nowadays from both homeopathic and allopathic branches. These medicinal plants play an important role in public health, especially in developing countries, where it is believed that the intense utilization of plants with therapeutic action does not lead to intoxication.<sup>1</sup> The cost of drugs in use today is too expensive for the majority of the population in the third world countries and therefore the search for some cheap sources of antimicrobial substances in nature become inevitable. Plants are good sources for new safe, biodegradable and renewable drugs. The use of plants as therapeutic agents in addition to being used as food is age long.

Though the therapeutic uses of plants by the primitive people lack scientific explanations<sup>2</sup>, there is a great awareness in the use and significance of these medicinal floras by the World Health Organization in several resource- poor nations.<sup>3</sup> This has led to intensified efforts on the documentation of medicinal plants.<sup>4</sup>

*C. auriculata* (family: Cesalpinaceae) is a common plant in Asia, profoundly used in Ayurvedic medicine as a tonic, astringent and as a remedy for diabetes, conjunctivitis and ophthalmia.<sup>5</sup> It is one of the principle constituents of 'Avaarai panchaga chooranam'- an Indian herbal formulation used in the treatment of diabetes to control the blood sugar level.<sup>6</sup>

**Plant Description:** Avaram (*Cassia auriculata* Linn), family Caesalpinaceae, is also known as Avaram tree, The leaves are alternate, stipulate, paripinnate compound, very numerous, closely placed, rachis 8.8-12.5 cm long, narrowly furrowed, slender, pubescent, with an erect linear gland between the leaflets of each pair, leaflets 16-24, very shortly stalked 2-2.5 cm long 1-1.3 cm broad, slightly overlapping, oval oblong, obtuse, at both ends, mucronate, glabrous or minutely downy, dull green, paler beneath, stipules very large, reniform-rotund, produced at base on side of next petiole into a filliform point and persistent.

Its flowers are irregular, bisexual, bright yellow and large (nearly 5 cm across), the pedicels glabrous and 2.5 cm long. The racemes are few-flowered, short, erect, crowded in axils of upper leaves so as to form a large terminal inflorescence (leaves except stipules are suppressed at the upper nodes). The 5 sepals are distinct, imbricate, glabrous, concave, membranous and unequal, with the two outer ones much larger than the inner ones. The petals also number 5, are free, imbricate, crisped along the margin, bright yellow veined with orange. The anthers number 10<sup>verification needed</sup> and are separate, with the three upper stamens barren; the ovary is superior, unilocular, with marginal ovules.

The fruit is a short legume, 7.5-11 cm long, 1.5 cm broad, oblong, obtuse, tipped with long style base, flat, thin, papery, undulately crimped, pilose, pale brown. 12-20 seeds per fruit are carried each in its separate cavity.<sup>7</sup>



**Fig. 1: Leaves and fruits of Avaram**

**Chemical Constituents:** Various phytoconstituents have been isolated from the various parts of *Cassia auriculata* Linn., which may be categorized as<sup>[8]</sup>

**Table1: Phytoconstituents isolated from various parts of *Cassia auriculata* Linn.**

S. No.	Part	Phytoconstituents
1.	Leaf	fatty acid esters, fatty acid amide, triterpene, diterpene alcohols and phytol
2.	Flower	terpenoids, tannin, flavonoids, saponin, cardiac glycosides and steroids
3.	Seed	Grape seed oil, n-Hexadecanoic acid ,9-Octadecenoic acid, (E)- ,E,Z-1,3,12-Nonadecatriene , Stearic acid

### Traditional Uses of Bael Tree Parts for Medicinal Purpose

*Cassia auriculata* L. commonly known as tanner's cassia, also known as "avaram" in Tamil language is a shrub belongs to the Caesalpiniaceae family. The shrub is specially famous for its attractive yellow flowers which are used in the treatment of skin disorders and body odour. It is widely used in traditional medicine for rheumatism, conjunctivitis and diabetes. It has many medicinal properties. Its bark is used as an astringent, leaves and fruits anthelmintic, seeds used to treat in eye troubles and root employed in skin diseases.<sup>9</sup>

It is also used for the treatment of ulcers, leprosy and liver disease<sup>10</sup>. The antidiabetic, hypolipidemic<sup>11</sup> and antioxidant<sup>12</sup> and hepatoprotective<sup>13</sup> effect of *Cassia auriculata* have been reported. It was also observed that flower and leaf extract of *Cassia auriculata* shown to have antipyretic activity.<sup>14</sup>

### Various proved therapeutic values of *Cassia auriculata* Linn.

**1. Anti diabetic Activity:** L.Pari & M.Latha have reported that, Oral administration of 0.45 g/kg body weight of the aqueous extract of the flower for 30 days resulted in a significant reduction in blood glucose and an increase in plasma insulin, but in the case of 0.15 and 0.30 g/kg, was not significant.[15]. They are one of the constituent of polyherbal formulation 'Diasulin' in the concentration range of 40 mg/dl which is proven to have antidiabetic activity.<sup>16</sup>

**2. Hepatoprotective activity:** Jeeva Jothi Dhanasekaran; Mathangi Ganapathy et al(2011) worked on *Cassia auriculata* Linn leaf and flowers extract on alcohol induced liver injury in albino rats and presented data of excellent hepatoprotective effects.<sup>17</sup>

**3. Antibacterial activity:** S. Maneemegalai and T. Naveen et al: Studies on the antibacterial activity of ethanol, methanol and aqueous extracts of dry flower and ethanol, methanol and acetone extracts of fresh flower of *Cassia auriculata* was conducted using agar disc diffusion method. The microorganisms used include *Staphylococcus aureus*, *Enterococcus faecalis*, *Bacillus subtilis*, *Salmonella typhi*, *Salmonella paratyphi A*, *Escherichia coli*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Vibrio cholerae* and *Shigella dysenteriae*. The maximum activity was observed against all organisms except *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. The minimum inhibitory concentration ranged between 12.5 mg/mL and 75mg/mL depending on microorganism and various extract. Presence of phytochemicals such as terpenoids, tannins, flavonoids, saponin, cardiac glycosides and steroids were observed. *Cassia auriculata* was observed to have antibacterial activity and can be used for medicinal purposes.<sup>18</sup>

**4. Antipyretic Activity:** L.Pari and M.Latha et al (2002) presented antipyretic properties of serial extract of leaves of *Cassia auriculata*, and presented that most of the extract caused a significant inhibition of Oral administration of 0.45 g/kg body weight of the aqueous extract of the flower for one day it showed good results for antipyretic activity<sup>15</sup>. Vedavathy and Rao has also done the similar work in the year of 1991. It showed a good resolution for the antipyretic activity<sup>19</sup>

**5. Antioxidant:** A. Kumaran R. Joel Karunakaran et al(2007) The ethanol and methanol extracts of *Cassia auriculata* flowers were screened for antioxidant activity. The antioxidant activity was determined by an improved assay based on the decolorization of the radical monocation of 2,2-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) and 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging method. The ethanol and methanol extracts of *C.*

*auriculata* flowers showed antioxidant activity in both assays<sup>12</sup>. Similar work was carried out by C Anushia, P Sampathkumar, L Ramkumar in (2009)<sup>20</sup>

**6. Anthelmintic potential:** Satish B. Kosalge\*, Ravindra A. Fursule et al 2009, The aqueous extract of *Cassia auriculata* leaves (Awali), were investigated for their anthelmintic potential against earthworms (*Eicinia faeteda*), tapeworms(*Raillietina spiralis*) and roundworms(*Ascardia galli*). Various concentrations (10-50 mg/ml) of each plant extract were tested in the bioassay and different parameters such as determination of time of paralysis and time of death of the worms were recorded. All the extracts exhibited significant anthelmintic activity at highest concentration of 50mg/ml. Piperazine citrate (10 mg/ml) was used as reference standard and distilled water as control<sup>21</sup>. Similar work was reported by Sucheta A Gaikwad\*, Asha A. Kale, Balaso. G. Jadhav, Nirmala. R. Deshpande and Jyoti. P. Salvekar in the year of 2011<sup>22</sup>

**7. Diuretic Activity (PS Kumar, S Sucheta, VS Deepa, P Selvamani, S Latha..)** et al The study was carried out to determine the antioxidant activity of *Cassia auriculata* by inhibition of lipid peroxidation technique. The highest inhibition of lipid peroxidation activity was observed in *C.auriculata* (89%). The potency of protective effect of *C.auriculata* was about 3 times greater than the synthetic antioxidant butylated hydroxy toluene (BHT). The total alkaloid content varied from 24.6 ± 0.18 to 72.6 ± 2 mg g-1 in the extracts. Flavanoid contents were between 23.15 ± 0.2 and 63.3 ± 0.6 mg g-1 in the methanolic extracts of these plants. Our study indicates that the antioxidant activity of *C.auriculata* could be harnessed as a drug formulation.<sup>23</sup>

**8. Liver injury:** Activity of *Cassia auriculata* leaf extract in rats with alcoholic liver injury was reported by(Senthil Kumar Rajagopal Ponnmozhi Manickam Viswanathan Periyasamy Nalini Namasivayam)<sup>24</sup>

**9. Antiulcer Activity:** The present study was carried out to evaluate the anti-ulcer activity of cassia auriculata leaf extract against pylorus ligation induced gastric ulcer. The methanolic leaf extract of cassia auriculata at dose of 300 mg/kg p.o. markedly decrease the incidence of ulcers in pyloric ligated rats. In pyloric ligated rats, there was an increase in the gastric volume, free and total acidity and ulcerative index as compared to the control group. The methanolic leaf extract of cassia auriculata at dose of, 300 mg/kg showed significant reduction in the above parameters which was comparable to the standard drug famotidine (10 mg/kg). *Cassia auriculata* extract showed protection index 79.4 %, whereas standard drug famotidine showed protection index.<sup>25</sup>

**10. Toxicity Studies:** The present investigation was carried out to evaluate the safety of aqueous extract of *Cassia auriculata* seeds by determining its potential toxicity after acute and subacute administration in rats. For acute study, aqueous extract of *Cassia auriculata* seeds was administered to rats in single dose of 0-5000 mg/kg given by the gavage and Monitored behavioral changes, adverse effects, body weight changes and mortality were determined for up to 14 days. At the end of the observation period animals were sacrificed and subjected to gross necropsy study. In the sub acute dose study the extract was administered orally at doses of 0, 1000 and 2000mg/kg daily for 28days to rats and biochemical, hematological parameters and histopathological study carried out after 28 days of oral administration. In the acute study of aqueous extract of *Cassia auriculata* seeds did not show any behavioral changes sign of adverse effects or deaths.<sup>26</sup>

**11. Other reported medicinal values:** Kumar et al, 2002., It also possesses medicinal properties: the bark is astringent, leaves and fruits anthelmintic, seeds used in eye troubles and root employed in skin diseases. It has been used for the treatment of ulcers, leprosy and liver disease.<sup>27</sup>

#### CONCLUSION

It is quite evident from this review that *Cassia auriculata* contains a number of phytoconstituents which reveals its uses for various therapeutic purposes. The Plant or its individual parts can be used for the treatment of various disorders in human being such as, diabetes, liver toxicity, fungal infection, microbial infection, inflammation, pyrexia and to relieve pain. Still, so much work is required with the *Cassia auriculata* to investigate the mechanism of actions with other therapeutic activities.

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