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Antibacterial effect of *Caesalpenia bonducella* Leaf Extract on *Salmonella typhi*

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Abstract: ***Plants are important source of treatment for various diseases. We are using them from prehistoric times in our folk medicines. Many plants have their different medicinal properties, among them one is Caesalpinia bonducella. It has many local names in different languages, it is known as kantkaranja in Hindi and fever nut in English. It is prickly shrub widely distributed all over the world specially in tropical areas. All parts of plant have medicinal properties ,so it is utilized intraditional system of medicines. It is used for the treatment of several diseases. It is very popular in Ayurveda, Siddha, Unani and Homeopathic system of medicines. This review attempts to encompass the antityphoidal property of Caesalpinia bonducella.***
Keywords: Caesalpenia bonducella, Salmonella typhi, Antityphodal properties, Kantkaranja

I. INTRODUCTION

Caeslpania bonducella is a medicinal plant belonging to the family caesalpiniaceae .It is prickly shrub widely distributed all over the world specially in India , Srilanka and Andaman and Nicobar Island's In India this plant is specially found in Tropical regions. It is also widely found in Koshi and Purnia commissionery of Bihar. In India traditional plant medicine has been considered as an important remedy for the treatment of several diseases .It is popular in various indigenous system of medicines like Homeo-pathic , Ayurveda, Siddha and Unani. All parts of the plants have meditational properties. So it is a very valuable traditional plant , which is utilized in traditional system of medicine .The plant has been reported to possess anxiolytic, antidiarrheal , antidiabetic, apoptogenic, anthelminthic, antiestrogenic, anti-inflammatory, antimalarial, antimicrobial, antifungal, antispasmodic, antioxidant, antiproliferative, antipsoriatic, antitumor, larvicidal, muscle contractile , hepatoprotective, anticonvulsant and antifilarial activities. Phytochemical analysis of *Caealpenia bonducella* has revealed the presence of alkaloids , flevonoids glycosides, tanins and triterpenoids. This review attempts to encompass the available literature on and *Caesalpenia bonducella* with respect to this pharmacognostic characters, chemical constituents, summary of its various pharmacological activities and traditional uses.

Salmonella typhi is a genus of rod-shaped (bacillus) Gram- negative bacteria of the family *Enterobacteriaceae*. The two species of *Salmonella* are *Salmonella enterica* and *Salmonella bongori*. *S.enterica* is the type species and is further divided into six subspecies that include over 2,600 serotypes. *Salmonella* was named after Daniel Elmer Salmon (1850-1914), an American veterinary surgeon.*Salmonella* species are non-spore-forming predominantly motile enterobacteria with cell diameters between about 0.7 and 1.5um,lengths from 2 to 5 um, and peritrichous flagella (all around the cell body,allowing them to move). They are chemotrophs,obtaining their energy from oxidation and reduction reactions, using organic sources .They are also facultative anaerobes ,capable of generating ATP with oxygen ("aerobically") when it is available,or using other electron acceptors or fermentation("anaerobically") when oxygen is not available.The genus *Salmonella* is part of the family of *Enterobateraceae* . Its taxonomy has been revised and has the potential to confuse. The genus comprise two species, *S. bongori* and *S.enterica*, the letter of which is divided into six subspecies: *S. enterica*, *S.e.salamae*, *S.e. arizone*, *S.e. diarizonae*, *S.houtenae* , and *S.indica*. The taxonomic group contains more than 2500 serotypes (also serovars) defined on the basis of the somatic O *(lipolysaccaride*) and flagellar antigens (the Kauffman- White classification). The full name of a serotype is given as, for example,*Salmonella typhimurium*. Further differentiation of strains to assit clinical and epidemiological investigation may be achieved by antibiotic sensitivity testing and by other molecular biology techniques such as pulsed-field gel electrophoresis, multilocus sequence typing, and increasingly, whole genome sequencing. historically, *Salmonellae* have been clinically categorized as invasive (typhoidal) or non-invasive (nontyphoidal *Salmonellae*) based on host preference and disease manifestations in humans.

II. METHOD

A. Collection of Plant Materials

The leaves of *Ceasalpinia bondecella* were collected in the month of April and May from adjacent areas of Rampur village of Hasanganj Block of Katihar District, Bihar, India.

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B. Preparation of Powder

The collected leaves were washed shade dried and pulverized into a coarse powder using a suitable grinder for size reduction. It was passed through mesh (size 40) and the fine powder was stored in air tight containers and used for the experiment and preparation of extract.

C. Preparation of Extracts

The leaves were dried in shade and crushed in an electric grinder and by using soxhelt extraction using methnol as solvent.aqueous extract is prepared from standard methods.The antibacterial potentialities of methanol extract and its fraction of *C. bondecella* leaves were investigated by the disc diffusion method against *Salmonella typhi*, 500µg and 800 µg/disc. Kanamycin (30µg/disc)was used as the standard drug. Antimicrobial activities of leaf extracts were evaluated their cytoxicity..

III. RESULT AND DISCUSSION

Culture test of Salmonella typhi shows different zones of inhibition with kanamycin and methahnol extracts of 500 and 800µg/disc in disc diffusion method in petri dishes. Kenamycin shows 30 mm and *C.boduc* 800µg/disc shows 6 mm zone of inhibition but *C.bonduc* 500 µg/disc shows no zone of inhibition.

Table 1 Antibacterial effect of *Caesalpenia bonducella* leaf extract fractions on *Salmonella typhi*

Name of bacteria	Zone of inhibition(mm)	Zone of inhibition(mm)	Zone of inhibition(mm)
	Kenamycin 30 mg /disc	C.bonduc 500 µg/disc	*C.boduc* 800µg/disc
Salmonella typhi	30	-	6

A variety of constituents present in *Caesalpenia bonducella* such as saponin , tannin ,polyphenols , flavonoids , and alkaloids , may be present in the fractions , further extensive investigations are required to determine the antimicrobial, antidiarrheal , and cytotoxic properties present in the leaf extracts.

IV. CONCLUSION

From the above study indicates that *Caesalpenia bonducella* extracts have medicinal potential of preventing culture of *Salmonella typhi*. These results further support the traditional use of this plant in folk medicine and more and more work have to done in this field to develop new phytomedicine which do not develop drug resistant and have very less or no side effects of antibiotics.

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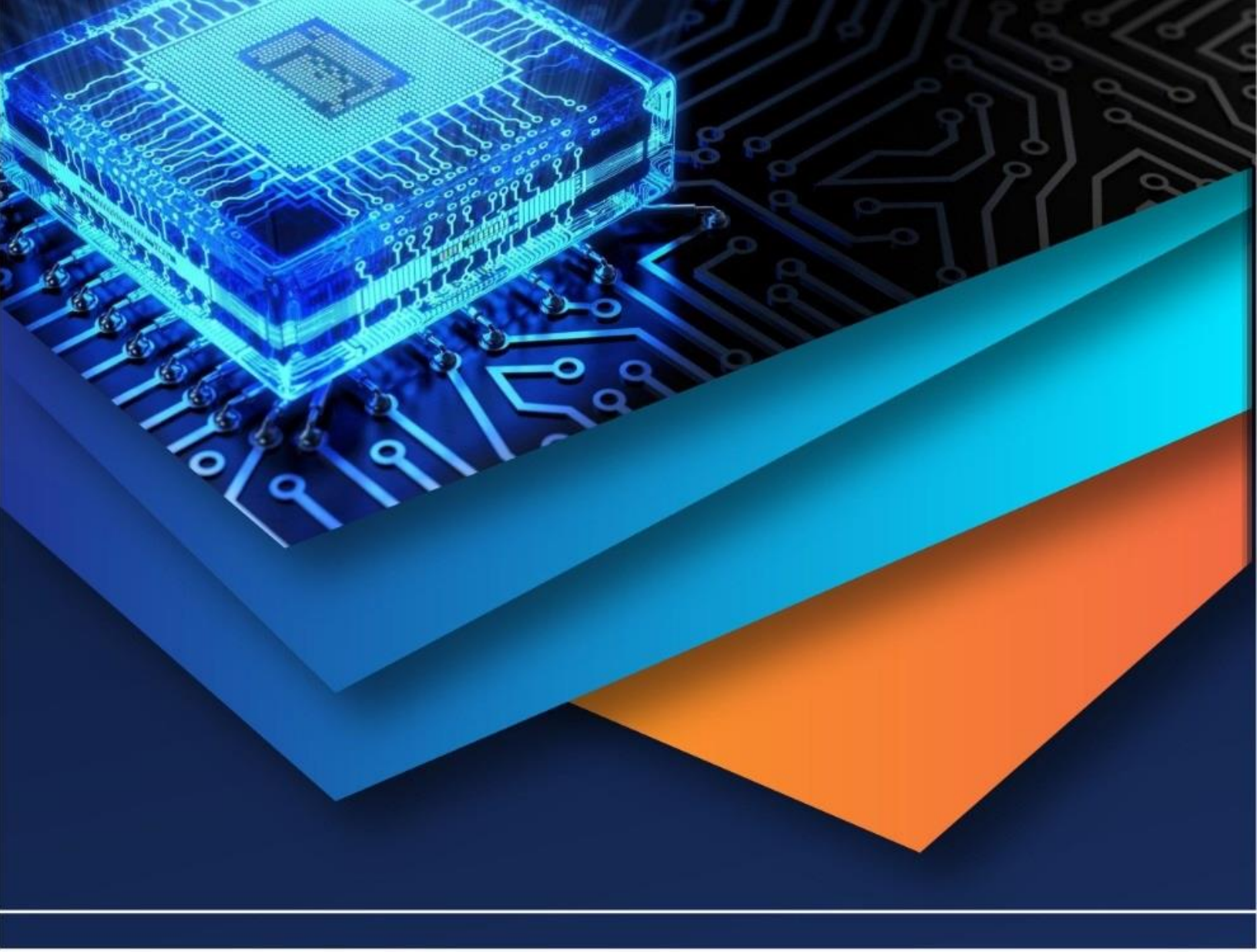

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