



Research Article

PHYTOCHEMICAL AND PHARMACOLOGICAL STUDIES ON PLANT CRYPTOLEPIS BUCHANANI (ROOT)

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ABSTRACT

Ethnopharmacological Relevance. *Cryptolepis buchanani* is a scrambling thin-stemmed shrub found in India. Traditionally in western Odisha, it is employed in the treatment of diabetics. This review discusses the traditional importance as well as the phytochemical, and pharmacological, importance of this plant.

Materials and Methods. Excerpta Medica Database, Google Scholar, and Springer were the electronic databases used to search for and filter primary studies on *Cryptolepis buchanani*.

Results. The dried aerial part powder of plant material was extracted Pet. Ether, chloroform, ethyl acetate, ethanol and water by hot continuous percolation (soxhlet extraction) method with increasing order of their polarity. The results of extractive values showed, the pet. ether extract have higher quantity of extract (11.4%) in comparison to other solvent extracts.

Conclusion. *Cryptolepis buchanani* is commonly found throughout India and is widely recognized in traditional system of medicine. Various pharmacological studies carried out have shown the potential of plant as an anti-inflammatory, antimicrobial, and anti-carcinogenic agent. Roots of the plant are used in various herbal formulations that are available in market for treating various ailments.

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INTRODUCTION

From the ancient time, plants are recognised (used) as a major resource for mankind. Like food materials in cosmetics & mostly in health care system. Every system of medicine like Siddha, Unani, and Ayurveda etc. has its own specialty & give very less side effects. Scientific evaluation of these drug with a research motivates for the betterment of health care system. In 1st stage identify and authenticate the source by its macroscopical & physical methods. Secondly to separate, isolate & characteristics the therapeutically active substance by extraction & analytical method. Thirdly to the test usefulness in animal or test model with pharmacological guidance. Finally summarization and re evaluation conforms the truth about the usefulness of the natural products. *Cryptolepis bucharani* .roem & schult (Isclpiadaceae) commonly known as jambupatra. It is found in local area in India. This plant is used in Indian folkloric medicine for its anti-diarrhoeal, anti-ulcerative, anti-inflammatory, blood purified, anti-cough, anti-bacterial, and diuretic.



METHOD & MATERIALS

The fresh aerial part of *Cryptolepis buchanani* was collected from adjoining area of Barpali (Dist-Bargarh, Odisha) in the month of November 2018. The plant was authenticated by Botanical Survey of India. The aerial part was dried under shade and powdered by the help of mechanical process. The coarse powder has stored in air tight container for further studies.

Extraction:

Extraction involves the separation of bioactive portion of the plant tissues from inactive components by using selective solvents with extraction technique.

- 1) **Hot successive extraction (Soxhlet) :**
yield was calculated

Table 1: Extractive values of <i>Cryptolepis buchanani</i>		
Sl. No.	Solvent used	Aerial part (%)
1	Pet. Ether	11.4
2	Chloroform	4.2
3	Ethyl acetate	2.6
4	Alcohol	7.9
5	Water	9.2

The following test results are reported at table no 2

There the '+' symbol are indicates present and '-' are absent of phytoconstituents.

Table 2: Qualitative Phytochemical Screening of C. buchanani

SL. NO	Phytochemical test	Pet. Ether	Chloroform	Ethyl acetate	Alcohol	water
1	Alkaloids					
	Mayer's test	-	+	-	+	-
	Wagner's test	-	+	+	+	-
	Hager's test	-	+	-	+	-
	Dragendorff's test	+	+	+	-	-
2	Carbohydrates & Glycosides					
	Molish's test	-	-	-	+	+
	Fehling's test	-	-	+	+	+
	Barfoed's test	+	+	+	+	+
	Benedict's test	-	+	+	+	+
	Borntrager's test	-	-	-	+	-
3	Saponins					
	Foam test	-	-	-	+	+
4	Proteins & amino acid					
	Millon's test	-	+	+	+	+
	Biuret's test	-	-	-	+	+
	Ninhydrin test	-	-	+	+	+
5	Phenolic compounds & flavonoids					
	Ferric chloride test	+	+	+	+	+
	Lead acetate test	+	+	-	+	-
	Alkaline test	-	-	-	+	+
6	Phytosterol					
	Solkowski test	+	+	+	+	+

PHARMACOLOGICAL EVALUATION

The free radical scavenging activities of the extracts were determined by using 2, 2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging method. DPPH in oxidized form gives a deep violet color in methanol. An antioxidant compound donates the electron to DPPH thus causing its reduction and in reduced form its color changes from deep violet to yellow. A fresh 0.002% solution of DPPH was prepared in methanol and its absorbance was recorded at 515 nm. 50 µl of pure extracts was mixed with 3 ml solution of DPPH and allowed to stand in darkness for 15 minutes. The absorbance was again recorded at 515 nm. The percentage inhibition of DPPH by extracts was calculated by using following formula.

$$\% \text{ inhibition} = (A - B/A) * 100$$

Where A is the absorbance of pure DPPH in oxidized form while B is the absorbance of sample taken after 15 minutes of reaction with DPPH.

RESULTS & DISCUSSION

The dried aerial part powder of plant material was extracted with Pet. Ether, chloroform, ethyl acetate, ethanol and water by hot continuous percolation (soxhlet

extraction) method with increasing order of their polarity. The results of extractive values showed, the pet. ether extract have higher quantity of extract (11.4%) in comparison to other solvent extracts. The extractive values were recorded in the table 1. Preliminary phytochemical screening of *Cryptolepis buchanani* were performed on its pet. ether, alcoholic and water extracts to identify its Alkaloid, Carbohydrate and Glycoside, Saponin, Protein & Amino acid, Phenolic compounds & Flavonoids and Phytosterols by using suitable chemicals and reagents. The results showed presence of carbohydrate, protein, alkaloids, glycoside, and steroids. The above qualitative phytochemical screening showed that the plant is a rich source of Alkaloids, Glycoside, Phenols & Flavonoids. However, presence of protein and glycoside is limited in plants. Antioxidant activity using DPPH assay was used to determine the concentration of extracts at which they scavenge the 50% of the DPPH solution termed as IC₅₀ values.

CONCLUSION

Cryptolepis buchanani is commonly found throughout India and is widely recognized in traditional system of medicine. Various pharmacological studies carried out have

shown the potential of plant as an anti-inflammatory, antimicrobial, and anti-carcinogenic agent. Roots of the plant are used in various herbal formulations that are available in market for treating various ailments. Keeping mind in the trust area of Ayurvedic medicinal plant chosen *C. buchanani* plant was studied for its Phytochemical, chromatography, and pharmacological like In-vitro antioxidant activity. However, isolation of individual phytochemical constituents and subjecting it to the biological activity will be definitely giving fruitful results and will open a new area of investigation of individual components and their pharmacological potency. From these results, it could be concluded that "*Cryptolepis buchanani* " contains various bio-active compounds. Therefore, it is approved as a plant of phytopharmaceutical importance.

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