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## PHYSICOCHEMICAL AND PHYTOCHEMICAL EVALUATION OF *CAPPARIS ZEYLANICA* LINN.

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### ABSTRACT

The present study attempt to evaluate the physicochemical and phytochemicals parameters of *Capparis zeylanica* leaves belong to family Caparadaceae is a climbing shrub found in through out India. The plant is used in folk medicine to treat, rheumatism, abdominal ulcers and hernia, swelling, itching, hepatitis, liver tonic, insect poisoning and anti-inflammatory. But there is no standardization work reported on *Capparis zeylanica* leaves. Physicochemical parameters, preliminary characterization and phytochemical analysis were carried out. There finding will be useful to words establishing quality control parameters for the standardization of the plant material.

**INTRODUCTION:** *Capparis zeylanica* Linn. (Caparadaceae) is a many branched thorny, sub-scandent climbing shrub. Plants are 2-3 m in height, armed with 3-6 mm long, leaves are elliptic or broadly lanceolate, base rounded, apex mucronate, flower profuse, pinkish white, later turning pink, berries are globular or elliposide, 3-4 cm in diameter, and seeds are globase, embedded in white pulp. The plant distributed through out the major parts of India, Bangladesh and some parts of Pakistan. *Capparis zeylanica* commonly known as Asadhua in Oriya and Ardanda in Hindi<sup>1</sup>.

*Capparis zeylanica* leaves have been used as folkmedicine and as ingredient in various Ayurvedic preparations. Traditionally it is use as Antidote to snake bite, to cure swelling of testicle, small pox, boils, cholera, colic, hemiplagia, neuralgia, sores, pneumonic and pleurisy<sup>2</sup>. Medicinal herbs are an indispensable part of the traditional medicine practiced all over the world due to low costs, easy access and ancestral

experience<sup>3</sup>. *Capparis zeylanica*, also commonly known as Indian caper, is a climbing shrub found throughout India and has been used as a 'Rasayana' drug in the traditional Ayurvedic system of medicine. In north India, the leaves are widely used as counter-irritant, febrifuge and as a cataplasm in swellings and piles<sup>4</sup>. *Capparis* species has been reported to anthelmintic, antimicrobial activity<sup>5</sup> and anti-inflammatory activity<sup>6</sup>.

We found relevant literature substantiating the uses indicated for *Capparis zeylanica* plant. Modern phytochemical screening of the plant has shown the presence of fatty acids<sup>7</sup>, flavonoids<sup>8</sup> and alkaloids<sup>9</sup> in the leaves. An attempt was made to evaluate the Phytochemicals and physicochemical parameters of *Capparis zeylanica* leaves

### MATERIALS AND METHODS:

**Plant material:** The plant material used in this study was collected during the month of October in Wardha city (Maharashtra), India and authenticated from

Botany Department, R.T.M. Nagpur University, Nagpur, India, where a voucher specimen No. 6581 is deposited. Petroleum ether, Chloroform, Ethyl acetate was procured from Hi-Media, all solvent and reagents was used analytical grade

#### EXPERIMENTAL AND RESULTS:

**Drying and size reduction of plant:** The leaves of plants material were washed thoroughly with tap water and subjected to shade drying for 5 weeks. The dried plant material was further crushed to powder mechanically and sieved and stored in air tight container for further analysis.

**Physicochemical Parameters:** The shade dried leaves of *Capparis zeylanica* was subjected for determination of physicochemical parameters such as foreign organic matters, ethyl acetate soluble extractives, water soluble extractives, total ash content, acid insoluble ash, water soluble ash, loss on drying and percentage moisture content were determined according to standard method<sup>11</sup>.

**TABLE 1: PHYSICOCHEMICAL EVALUATION OF CRUDE DRUG OF CAPPARIS ZEYLANICA LEAVES**

Parameters	Values obtained* % w/w (±) S.D.
Foreign organic matter	0.40 ± 0.202
Total ash value	6.57 ± 0.430
Acid insoluble ash	2.56 ± 0.121
Water soluble ash	3.56 ± 0.221
Loss on drying	2.81 ± 0.318
Moistures content	1.26 ± 1.139
Ethyl acetate soluble extractive value	14.81 ± 0.519
Water soluble extractive value	30.91 ± 2.220

\*Results of six determinations

**Preparation of the extract:** The shade dried leaves of *Capparis zeylanica* was extracted with pet ether, chloroform and ethyl acetate successively by soxhlation method, water by maceration method at room temperature. Concentrated over water bath and evaporated under reduced pressure. The percentage yield of extracts was calculated.

**TABLE 2: SOLVENT EXTRACTION METHODS AND RESPECTIVE YIELD FROM PLANT POWDER OF CAPPARIS ZEYLANICA LEAVES**

Solvents	Polarity index	Extraction	Percentage Yield
Petroleum ether	0.0	Soxhlation	12.31
Chloroform	4.1	Soxhlation	10.13
Ethyl acetate	5.2	Soxhlation	24.61
Water	9.0	Maceration	36.10

**Preliminary Phytochemical Analysis:** Phytochemical analysis of all the extracts was carried out by using standard conventional protocol<sup>11</sup>.

**TABLE 3: PRELIMINARY PHYTOCHEMICALS ANALYSIS**

Chemical constituents	Test /reagent	PTE	CHE	EAE	AQE
Steroids	Salkowaski	++	++	--	--
	Dragendroff's test	--	++	--	--
Alkaloids	Hager's test	--	++	--	--
	Mayer's test	--	++	--	--
	Wagner's test	--	++	--	--
Saponins	Foam test	--	--	++	++
	Haemolysis test	--	--	++	++
Fats and oils	Filter paper test	++	++	--	--
	Ferric chloride test	--	--	++	++
Tannins and Phenolic	Lead acetate test	--	--	++	++
	Pot. Dichromate	--	--	++	++
	Bromine water	--	--	++	++
Flavonoids	Shinoda test	--	--	++	++
	Lead acetate test	--	--	++	--
Carbohydrates	Molisch test	--	--	++	++
	Fehling's test	--	--	++	++
	Barfoed's test	--	--	++	++
Proteins	Millon's test	--	++	++	++
	Biuret test	--	++	++	++

+ ve : Present; - ve: Absent, PTE: Petroleum ether extract; CHE: Chloroform extract; EAE: Ethyl acetate extract; AQE: Water extract

**DISCUSSION:** The present yields of pet ether, chloroform, ethyl acetate and water extracts were found to be 12.31, 10.13, 24.61 and 36.10 respectively. The physicochemical parameters foreign organic matter was found to be  $0.40\% \pm 0.202$  it indicates that very less adulteration was found in selected plant material. Total ash, acid insoluble ash and water soluble ash value were found to be  $6.57\% \pm 0.430$ ,  $2.56\% \pm 0.121$  and  $3.56\% \pm 0.221$  respectively. Total ash value of plant material indicated the amount of minerals and earthy material attached to the plant material. Loss on drying was observed  $2.81\% \pm 0.318$  it indicate that very low quantity of selected plant material was loss after drying. The moistures content was found to be  $1.26\% \pm 1.139$ . The less value of moistures content could prevent bacterial, fungal and yeast growth.

The water soluble extractive value was found to be  $30.91\% \pm 2.220$  indicating the presence of polar constituents like organic and inorganic compounds and ethyl acetate soluble extractive values was found to be  $14.81\% \pm 0.519$  indicated the presence of semi polar constituents. The preliminary phytochemical screening of the various extracts showed the presence of alkaloids in chloroform extract, fats and oils in pet ether and chloroform extracts, tannins and phenols in ethyl acetate and water extracts, saponins, flavonoids and carbohydrates in ethyl acetate and water extracts and proteins were present in chloroform, ethyl acetate and water extracts.

**CONCLUSION:** The present study on physicochemical parameters and preliminary phytochemicals analysis provides importance information which may be help in

authentication and adulteration for quality control of row material. The present study adds to the existing knowledge of *Capparis zeylanica* and it will be very useful for development of a formulation for treating various diseases.

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