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Physicochemical Studies Of Ethnomedicinal Important Capparis L. Species From Melghat Forest. Dist- Amravati (MS) India

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Abstract:

The Indian Systems of Medicine and Homoeopathy (ISM&H) consist of Ayurveda, Siddha, Unani and Homoeopathy, and therapies such as Yoga and Naturopathy. Some of these systems are indigenous and others have over the years become a part of Indian tradition. It is probably accurate to say that almost all life forms are afflicted with some type of disease. Disease continues to be the most basic problem faced by humans since the prehistoric times. Evidence for the existence of a well-organized system of medicine in India can be traced back to the archaeological.

Ethno-medicine has become an inter-disciplinary science from ancient times, if we studied it comparatively it can lead development of some innovative formulations. Further it also true that knowledge of Botany, Biochemistry, Ethnopharmacology, Phytochemistry and Pharmacognosy are important aspect of herbal medicine and farms the basic of alternative and complimentary system of medicine like Ayurveda. The Present paper is focus on Ethno-medicinal importance and Physicochemical analysis of Capparis L. species which has a wide natural distribution, to treat a variety of ailments.

Keywords: Physicochemical studies, Ethno-medicine, Melghat Forest, *Capparis Species*

Introduction:

The earliest sources of medicine were plants. Historically, people have used medicinal plants for healing since the prehistoric era. The utilization of medicinal plants as a means of treating illnesses is likely the most ancient approach that humans have employed to address sickness. As a result, medicinal plants have been utilized for therapeutic purposes across the globe, playing a significant role in various traditional medicine systems [1,2]. Whether it be Ayurveda, Chinese traditional medicine, Unani, Tibetan Medicine, Amazonian practices, or African Medicine, all traditional medicine systems incorporate phytotherapy into their teachings, despite being rooted in different theoretical and cultural frameworks [3,4] The World Health Organization (WHO) has recommended that medicinal plant materials go through a number of quality control tests [5,6]

Identification, purity, content, and other chemical, physical, and/or biological characteristics are taken into consideration when determining quality control, along with manufacturing[7].

Capparaceae commonly known as the Caper family is a family of plants in order Brassicales [8]. As currently circumscribed, it contains 33 genera and about 700 species. The largest genus in this family is *Capparis* L. (about 150 species). Most members present in this family shows considerable diversity in habit, fruit, and floral features [9,10]. The tribal peoples and herbal healers use *Capparis decidua* (Forsk.) Edgew. against intermittent fever, asthma and inflammations[11,12]. The root bark was found to be prescribed by local healers to cure rheumatic problems [13]. The stem and fruit extracts were given to cure foul breath, urinary problems and cardiac disorders [14]. The plant is also used in ulcers, vomiting and piles. The tribals of this area use the *Capparis grandis* L.f. stem bark to cure asthma [15]. They use to take stem bark decoction with black pepper and garlic orally. The leaves are being used as antiseptic to heal wounds and burns. The tribal healers also administered the leaves and stem decoctions and berries to cure anemia, as blood tonic. The viscous substance obtained from the berries are use to mix with milk and taken as refreshment in some local communities [16,17] tribal people and vidoos it is clear that, Traditionally Capparis zeylanica L. Species found to use by local peoples as Antidote against snake bite. Local medicine men also prescribe this plant to cure, swelling of testicle, sores, boils colic problems and neuralgia. The tribal's people and vaidoos also use this to get relief from cholera [18,19]

Materials and Methodology:

Survey and Collection:

The plants were collected from Melghat forest and identified with help of taxonomic keys and floras. These collected Capparis Plants were washed with distilled water and sterilized and then dried under shade. On the data collected from tribal people and vidoos it is clear that, Traditionally Capparis zeylanica L. Species.

Fig. 1 *Capparis. zeylanica* Linn.

Fig. 2 *Capparis. decidua* Forsk Edgew

Fig. 3 *Capparis. grandis* L.f.

All three Capparis L.plants selected for the study have high medicinal importance. These plants are found to be use in medicine since ages by various ethnic communities. During the present study, the ethnomedicinal importance of these plants were identified and extracted from the local tribals and rural local peoples and medicine men. The collected data was then interpreted in light of the recent development in the field and presented here.

Result:

Physico-Chemical Study:

The collected capparis plants were sterilized, dried in the shade, and ground into a powder. After making powder, the powder was analyzed for various physic-chemical parameters. These parameters includes, extractive values and ash values; powder analysis and its reaction with routine laboratory chemicals and its examination under UV light. The moisture content was determined by heating the drug at 105 ℃ to constant weight and calculated the loss of weight. The extract was prepared in various solvents and total ash, acid insoluble ash, and acid soluble ash values were obtained. The effect of various chemicals and their reactivity with powder was also analyzed using readily available laboratory chemicals and reagents.

Extractive values and Ash values:

The extractive values of the three powder samples were determined in water, ethanol and petroleum ether. It was found that all the powder samples showed high values in water and least in petroleum ether. Among all the samples of *C. decidua* (Forsk.) Edgew. showed high extractive values; in water it was 11.5%, in ethanol (4.25%) and in petroleum ether (1.30%). The extractive values in all followed the trend i.e. *C. deciduas* (Forsk.) Edgew. > *C. zeylanica* L. > *C. grandis* L.f.. The details are given in (Table 1). The ash values are also presented (Table 1). The samples of *C. grandis* L.f. showed high ash values. The total ash value of *C. zeylanica* L. was 15.8%, C. deciduas (Forsk.) Edgew. was 16.5% and *C. grandis* L.f. was 17.8. the water soluble ash values and acid soluble ash values are mentioned in (Table 1).

Table- 1- Extractive values and ash values of powdered samples

Sample of	Extractive values		
	In water	**In Ethanol**	**In petroleum ether**
C. zeylanica L.	10.60%	3.50%	0.95%
C. deciduas (Forsk.) Edgew.	11.50%	4.25%	1.30%
C. grandis L.f.	10.30%	2.85%	0.55%
Ash values			
C. zeylanica L.	15.8%	7.2%	3.5%
C. decidua (Forsk.) Edgew.	16.5%	8.2%	4.8%
C. grandis L.f.	17.8%	8.5%	5.35%

Powder analysis:

Behavior of powder drug with different chemical reagents was studied to detect the presence of phytoconstituents with color changes under daylight by reported method and the results are shown in Table 2. Powdered drug are examined in short and long UV to detect the fluorescent compounds by the reported method. The results are compiled in Table 3. Both these methods are important to identify the purity of the crude available powder drugs and also to identify the contamination if any.

Table 2- Behavior of powdered drug with different chemicals.

Sr. No.	**Treatment**	**Colour observed**		
		C. zeylanica	***C. deciduas***	***C. grandis***
1	Powder as such	Light green	Light green	Grayish green
2	Powder + Conc. HCl	Fluorescent Green	Green	Grayish brown
3	Powder + Conc. H_2SO_4	Dark Green	Yellow Orange	Pale green
4	Powder + Acetic acid	Dark Green	Green	Green
5	Powder + 5% KOH	Green	Dark Green	Green
7	Powder + 5% $FeCl_3$	Green	Dark Green	Light green

Table 3- Fluorescence analysis of powdered samples.

Sr. No.	Treatment	Short UV light (254 nm)			Long UV light (365 nm)		
		C. zeylanica	*C. deciduas*	*C. grandis*	*C. zeylanica*	*C. deciduas*	*C. grandis*
1	Powder as such	Light green	Light green	Gray green	Light green	Green	Gray
2	Powder + 1 N NaOH in Methanol	Light yellow	Yellow green	No change	Yellowish green	Translucent	Duff gray
3	Powder + 1 N NaOH	Fluorescent green	Yellow green	Greenish yellow	No florescence	No florescence	No florescence
4	Powder + 50% H_2SO_4	Brown	Brown black	Brown	Green	Brown	Brown
5	Powder + Pet. Ether	No change	No change	No change	Yellow	Yellow green	Pale green
6	Powder + Chloroform	Green	Dark green	Green	No florescence	No florescence	No florescence
7	Powder + 5% $FeCl_3$	No change	No change	No change	Brownish green	Greenish brown	Brownish green

Conclusion:

The extractive and ash values of each selected plants was analyzed. It was found that, the extractive values in water were found to far high than in ethanol and petroleum ether. The highest extractive value was found in *C. decidua* (Table1). The total ash values were detected, *C. grandis* showed highest ash value, followed by *C. decidua* and *C. zeylanica* (Table1). The behavior of powdered drug of each plant with the different laboratory chemicals was also investigated. The powder drug samples were treated with Conc. HCl, Conc. H_2SO_4, Acetic acid, KOH and $FeCl_3$ and the resultant colors were noted (Table 2). Their behavior under short UV light (254 nm) and long UV light (365 nm) was also recorded (Table 3).

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