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Nutraceutical plant *Fagonia cretica* aerial parts standardization

Jaya Patel [1], Ashutosh Agrawal[2], Parixit Prajapati[2]
1 Department of Pharmacognosy, Parul Institute of Pharmacy and Research, Parul University, Vadodara, Gujarat
2 SSR College of Pharmacy, Sayli, Silvassa, 396230, Union Territory of Dadra and Nagar Haveli and Daman and Diu, India

INTRODUCTION & AIM

A nutraceutical can be defined as any substance that may be considered a food or part of a food and provides medical or health benefits including the prevention and treatment of disease. *Fagonia cretica* is commonly known as Dhamaso and belongs to the Zygophyllaceae family. The aerial parts of the plant contain phytoconsituents like quinine, harmine, stigmasterol, rosmarinic acid, and ursoliic acid. Its medicinal properties include cytotoxic, anti-diabetic, anti-tumor, and hepatoprotective.

As per the literature review, the aerial parts of *F. cretica* possess many biologically active phytoconstituents. Additionally, there are no reports available for the standardization of *Fagonia cretica* plant powder. This poster consists of the identification of various standardization parameters as well as microscopical evaluation of the plant powder as per AYUSH and WHO guidelines and no reports have been found for its standardization. Therefore, there is a need to report on the standardization of the aerial parts of *Fagonia cretica*.

METHOD

1. Powder Characteristics Study of *F. cretica* powder

Total 5mg of powdered dug was taken for analysis and washed with the distilled water. After that the drug was treated with some reagents like iodine, phloroglucinol, chloral hydrate separately and kept for five minutes. A small amount of the treated drug was taken on a slide and a drop of glycerine was added. The slide was mounted and observed by the microscope as per the standard method.

2. Physicochemical evaluations

- Alcohol-soluble extractive value
- Water-soluble extractive value
- Ash value
- Acid-insoluble ash value
- Water-soluble ash value
- Moisture content
- pH

3. Thin Layer Chromatographic Analysis

The methanolic extract of the *F. cretica* sample was subjected to TLC studies using precoated silica gel 60 F254 aluminium plates as stationary phase. Mobile used was toluene: ethyl acetate: formic acid in the ratio of 1:9:0.2 v/v/v. The chamber was saturated for 15 min prior to TLC plate development. After development plate was observed under UV light at 254nm.

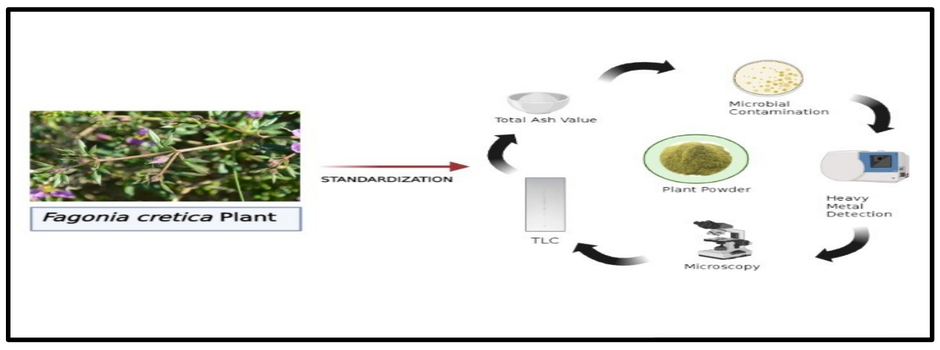
4. Toxicological Parameters

PARAMETERS	IDENTIFY	DETECTION METHOD
Heavy metals	Lead Arsenic Cadmium Mercury	Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)
Microbial contamination	Total viable aerobic count	Microbial Testing

5. HPLC Method Development4. HPLC Method Development

- Stationary phase selection
- Mobile phase selection
- Flow rate
- Column oven temperature
- Injection volume
- Detection wavelength

6. Standardization



RESULTS & DISCUSSION

1. Microscopical studies

Powder microscopy of the plant revealed the various groups of fibres, unicellular non glandular trichomes, fragments of Testa, anomocytic stomata, endodermis, bordered pitted vessels (Fig 1).

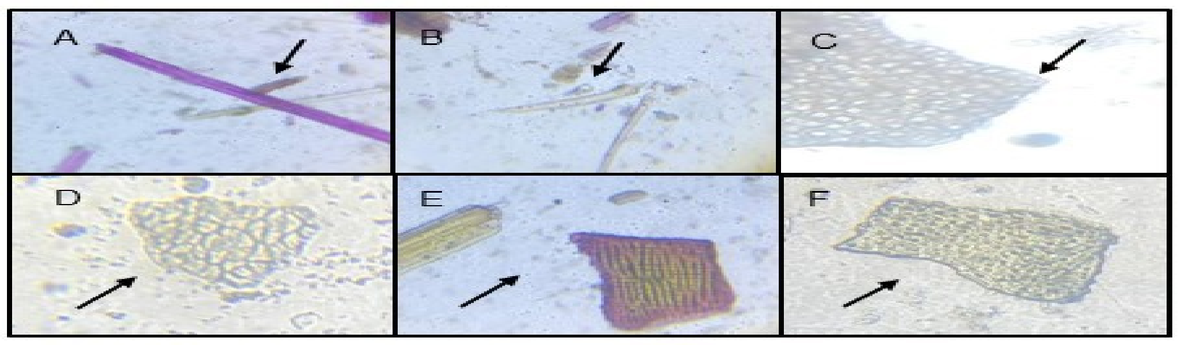


Fig 1: Images for powder characteristics of *Fagonia cretica* (A: Groups of fibers, B: Unicellular non-glandular trichomes, C: Fragments of Testa, D: Anomocytic stomata, E: Endodermis, F: Bordered pitted vessels)

2. Physicochemical parameters of powdered plant material

PHYSICOCHEMICAL CONSTANTS	RESULTS
Alcohol-soluble extractive value	24.0% w/w
Water-soluble extractive value	22.8% w/w
Ash value	14.5% w/w
Acid-insoluble ash value	2.0% w/w
Water-soluble ash value	5.0% w/w
Moisture content	10.3% w/w
pH	5.04

3. Determination of Heavy Metals

NAME OF HEAVY METAL	LIMITS AS PER WHO	OBSERVED VALUE (PPM)
Arsenic (As)	3	ND
Lead (Pb)	10	ND
Cadmium (Cd)	0.30	ND
Mercury (Hg)	0.03	0.0166

4. Evaluation of Microbial Contamination and HPLC Chromatogram

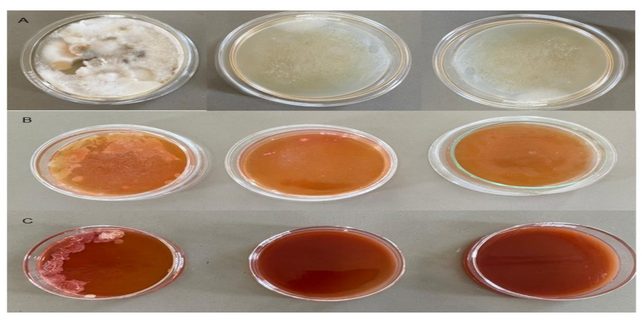


Fig 2: Image of petri plate showing microbiological contamination of F. cretica where **A**: Petri plates for Fungi detection, **B**: Petri plates for *Staphylococcus aureus* detection, **C**: Petri plates for *Escherichia coli* detection. The first, second, and third in all three represent positive, sample, and control respectively.

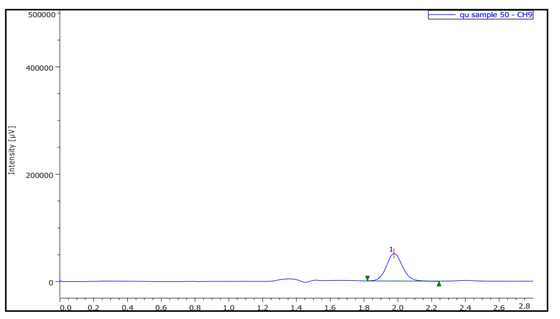


Fig.3 : Chromatogram of sample (extract)

CONCLUSION AND REFERENCES

Before a botanical plant can be used for medicinal purposes, it should be studied in detail to ensure its therapeutic efficacy. The present study covers organoleptic studies, microscopy, powder characteristics, phytochemical screening, inorganic constituent determination, Heavy metal assay, TLC studies, microbiological contamination studies and HPLC analysis for aerial parts of *F. cretica* which was reported first time to be used for the identification of plant material.

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