Pharmacognostical evaluation of *Fagonia arabica* L. Stem

Roshan Patel*, Nitinkumar Upwar, Naveen Kumar Mahobia¹, Naheed Waseemi, Dr. A. K. Jha² and Sudarshan Singh³

Department of Pharmacognosy, Shree Leuva Patel Trust Pharmacy Mahila College, Amreli, (Gujarat), India.

¹Department of Pharmaceutical Chemistry, Shree Leuva Patel Trust Pharmacy Mahila College, Amreli, (Gujarat), India.

²Department of Pharmacology, Shree Leuva Patel Trust Pharmacy Mahila College, Amreli, (Gujarat), India.

³Department of Pharmaceutical Chemistry, Shri Shankaracharya Institute of Pharmaceutical Science, Bhilai, (Chhattisgarh), India.

*Department of Pharmaceutics, Shree H.N.S. Institute of Pharmaceutical Education and Research, Rajkot, (Gujarat), India.

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**ABSTRACT**

*Fagonia arabica* L., belonging to the family Zygophyllaceae, commonly known as Dhamaso in Gujarati, Ustarkar in Hindi, Dhanvyas in Sanskrit is a wildly grown perennial plant. The plant is globally distributed in Africa, Arabia, Pakistan and India. It contains several triterpenoid saponins and mainly used in skin diseases. The present study deals with the micromorphological evaluation carried out on the stem of *Fagonia arabica*, one of the WHO accepted parameter for identification of medicinal plants. These observations would be of immense value in the botanical identification and standardization of the drug in crude form.

**Key words:** Microscopy, Morphology, Dhamaso, *Fagonia arabica*.

**INTRODUCTION**

The plant *Fagonia arabica* L., belonging to the family Zygophyllaceae, commonly known as Dhamaso in Gujarati, Ustarkar in Hindi, Dhanvyas in Sanskrit is a small, spiny, erect, undershrub, more or less glandular, brownish matter and sclereides are present individually or in group throughout cortex region. The plant shows synergistic effect with *Heteropneustes fossilis* extracts against myocardial, cerebral infarction, and embolism disorder in mice.[9]

However, no work has been carried out on the stem of this plant, which contains potentially useful ethnomedicinal drugs. Therefore, the present work was undertaken to study the pharmacognostic aspects of *Fagonia arabica* stem.

**MATERIALS AND METHODS**

**Plant collection and authentication**

The plant materials were collected from their type localities. It was identified and authenticated by Department of Botany, Smt. U. B. Bhagat Science Mahila College, Amreli, Gujarat. A voucher specimen has been deposited at the museum of the institute.

**Chemicals and Instruments**

Simple microscope, compound microscope, common glassware were the basic apparatus and instruments used for the study. Photography was done by using microscopy camera 130UMDModel. Various staining reagents were used for histochemical tests.

**Morphology and microscopy analysis**

Morphological studies were carried out by using simple determination technique, the shape, size, colour, odour, taste, surface and fracture. Microscopic studies were carried out by preparing of thin hand section of leaf. The sections were cleared with alcohol and stained as per the protocol. Histochemical reaction were applied with concentrated Hydrochloric acid and phloroglucinol and were mounted in glycerine for identification of lignified elements. Iodine solution for identification of starch grains, sudan red-III for identification of cutin.[8-9]

**Powder microscopy**

Powder microscopy of shade dried powder was carried out with various reagents for identification of the powder characteristics of drug.[10-11]

**RESULTS AND DISCUSSION**

**Morphological characteristics of stem**

*Fagonia arabica* is a small, spiny, erect, undershrub, more or less glandular, branches slender, terete, triate and glabrous. The morphological studies revealed the stem to be whitish green colour, internode long (1.6-3 cm), cylindrical shape, characteristic odour with sweet, bitter, sharp and sour taste, short fracture. Minute hairs are present on the surface.

**Microscopical characteristics of stem**

The transverse section of the stem is irregularly circular shaped [Figure 1 and 2]. The epidermis consists of single layered rectangular cells, and is surrounded by a thin cuticle layer, transverse with few stomata [Figure 3]. Cortex is consists of several layer of collenchymatous cells and parenchymatous cells. There are lignified sclerenchymatous fibers, mucilaginous brownish matter and sclereides are present individually or in group throughout cortex region. Stellar region consists of xylem, phloem and medullary rays. Xylem is wedge shaped patches separated by multiseriate medullary rays and composed of large number of lignified pitted xylem vessels and xylem parenchyma. Phloem is appearing like caps over the metaxytem. Medullary rays are appearing like spokes of a wheel and composed of thin
walled elongated parenchymatous cells packed with starch grains [Figure 4]. Pith is the central part of stem composed of large lignified or unlignified parenchymatous cells.

**Powder characteristics**

The shade dried powder has studied. It was greenish brown in colour having characteristic odour and sweet, bitter, sharp and sour taste. Lignified
and un lignified parenchyma [Figure 5 and 6], abundant brownish matter [Figure 7 and 8], lignified sclerenchymatous fibres [Figure 9 and 10], fragments of quadrangular shaped epidermis, anomocytic stomata [Figure 11], fragments of lignified pitted and spiral vessels [Figure 12 and 13], irregular, lignified, stratified sclereids occurring single or in bands with varying lumen [Figure 14-16], minute simple starch grains were observed under microscope [Figure 17].

CONCLUSION
As there is no pharmacognostic / anatomical work on record of this much valued traditional drug, the present work was taken up with a view to lay down standards which could be useful to detect the authenticity of this medicinally useful plant. The pharmacognostic features examined in the present study may serve as tool for identification of the plant for validation of the raw material and for standardization of its formulations.

REFERENCES
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