

ORIGINAL RESEARCH ARTICLE

Pharmacognostical Studies on Root of *Fagonia schweinfurthii* Hadidi

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ABSTRACT

Fagonia schweinfurthii (family *zygophyllaceae*) is a plant of desert region. It is commonly known as dhamasa and dhamasia. It is small, spiny, erect, undershrubs, more and less grandullar; branchess slender, terete, triage, glabrous. Leaves opposite, 1-3 foliate; petioles very variable in length, from 3 - 30 mm long, deeply striate, very slender; stipules 2 pairs of sharp slender thorns, sometimes exceeding 12 mm in length; leaflets linear, acute, sessile or with very short petiolules. Traditionally, the plant has been used to cure a number of ailments by the people living in desert region such as skin eruptions, in heal sores, skin diseases, anti-pyretic, in pain relief, ear infection, venereal diseases, etc. many other diseases. The present paper deals with comprehensive pharmacognostical studies on root part of this plant, including macroscopical analysis, preliminary examination of root powder, florescence analysis. This will help in the identification of powder drug prior using in any herbal formulations.

Key words: *Fagonia schweinfurthii*, skin disease, venereal disease, macroscopical analysis.

INTRODUCTION

Desert plants are unique adaptation from environmental conditions. *Fagonia* is a genus of plant in the family *zygophyllaceae* with about 167 species around Mediterranean, Asia and in the North America. This species has a restricted global distribution occurring in Pakistan and India. Within India, it has been recorded in the upper gangetic plains and Tamil Nadu (Coimbatore, Ramnathapuram). It is found from arid and semiarid areas of Rajasthan state in India in Jodhpur, Barmer, Bikaner, Churu, Jaiselmer, Jhunjhunu, Sikar and Shri Ganganagar districts. It is commonly known as dhamasa and dhamasia. It is small, spiny, erect, undershrubs, more and less grandullar; branchess slender, terete, triate, glabrous. Leaves opposite, 1-3 foliate; petioles very variable in length, from 3 - 30 mm long, deeply striate, very slender; stipules 2 pairs of sharp slender thorns, sometimes exceeding 12 mm in length; leaflets linear, acute, sessile or with very short petiolules. Traditionally, the plant has been used to cure a number of ailments by the people living in desert region such as skin eruptions, in heal sores, skin diseases, anti-pyretic, in pain relief, ear infection, venereal diseases, etc. many other diseases [11,12].

The present paper deals with comprehensive pharmacognostical studies on root part of this

plant, including macroscopical analysis, preliminary examination of root powder, florescence analysis, as well as behaviour of root powder with different chemical reagents. This will help in the identification of powder drug prior using in any herbal formulations.

MATERIALS AND METHODS

Collection of plant materials:

This plant was collected from the Mandore hills of Jodhpur (Rajasthan) in the month of March, and authenticated by Botanical Survey of India, Jodhpur. The specimen has been submitted to the Departement of Pharmacognosy, Lachoo Memorial College of Science & Technology, Jodhpur and Rajasthan for future reference.

Macroscopical Analysis:

Shade dried root of *Fagonia schweinfurthii* was evaluated for its morphological and sensory profile by observing of its colour, odour, taste, size, shapes and special feature like touch, texture and fracture [1, 2, 3, 4, 20].

Florescence Analysis of root powder:

Florescence analysis of root powder of *Fagonia schweinfurthii* was carried out by the treatment of different chemical reagents such as 50% H₂SO₄, 50% HNO₃, 5% KOH, CH₃OH, 1N HCl, 1N methonolic NaOH, C₂H₅OH(95%), 1N ethonolic NaOH, acetone with it and powder as such and it

was observed under visible and UV light for florescences [5, 16, 19, 21, 22, 23, 25].

Physicochemical parameters:

Different physicochemical parameters such as foreign organic matter, loss on drying, swelling index, foaming index, total ash value, acid insoluble ash value, water soluble ash value, sulphated ash value, ether extractive value, ethanolic extractive value and water soluble extractive value were determined as per standard procedures recommended in WHO guideline [1, 17, 21, 22, 23, 24].

Examination of powdered plant material (root) for preliminary tests:



Fig-1: Whole plant of *Fagonia Schweinfurthii*. Fig-2: Roots of *Fagonia schweinfurthii*. Fig-3: Scaling of *Fagonia schweinfurthii* root.

Florescence Analysis of root powder:

The root powder of *Fagonia schweinfurthii* was treated with different chemical reagents and

The root powder was examined for its organoleptic characteristics and the general and micro chemical tests were performed with powder and its aqueous extract [6, 18].

RESULTS AND DISCUSSION

Macroscopical Analysis:

The roots of *Fagonia schweinfurthii* are 20-30 cm. long and 3-6mm in diameter, with few (2-3) lateral roots of slightly smaller size, straight, unbranched. Outer surface is buff to greyish-yellow and in the centre hard. Odour characteristics, taste bitter and acid. The roots are rough and hard, slightly wrinkled surface, fracture is short (Fig 1, 2&3).

observed under visible and UV light. The result of florescence analysis of root powder is shown in (Table 1).

Table 1: Florescence analysis of root powdered of *Fagonia schweinfurthii*.

Treatment of powdered leaf	Florescence observed	
	Under Visible light	Under UV light
Powder as such	Light yellow	Yellow
50% H ₂ SO ₄	Light yellow	Yellowish green
50% HNO ₃	Light yellow	Yellowish green
5% KOH	Light yellow	Yellowish brown
CH ₃ OH	Light yellow	Yellow
1N HCl	Light yellow	Light green
1N Methonolic NaOH	Light yellow	Light green
C ₂ H ₅ OH (95%)	Light yellow	Yellow
1N ethonolic NaOH	Light yellow	Yellow
Acetone	Light yellow	Light green

Physicochemical parameters:

Different physicochemical parameters such as Foreign organic matter, Loss on drying, swelling index, Foaming index, Total ash value, Acid insoluble ash value, water soluble ash value,

Sulphated ash value, Ether extractive value, Ethanolic extractive value and Water soluble extractive value were determined as per standard procedures recommended in WHO guideline. Results are given in (Table 2).

Table 2: Represent the results of physicochemical parameters of root powder *Fagonia schweinfurthii*.

Parameter	Limits
Foreign organic matter	1.5% w/w
Loss on drying	4.6% w/w
Swelling index	8.0%
Foaming index	Less than 100
Total ash value	5.8% w/w
Acid insoluble ash value	0.98% w/w
Water soluble ash value	1.5% w/w
Sulphated ash value	1.0%
Ether extractive value	1.6w/w %

Ethanollic extractive value	4.8% w/w
Water extractive value	12% w/w

Examination of powdered plant material (root) for preliminary tests:

The root powder was examined for its organoleptic characteristics and the general and

microchemical tests were performed with powder and its aqueous extract. Results are shown in (Table 3).

Table 3: Preliminary examination of root powdered of *Fagonia schweinfurthii*.

Tests	Observation	Result
Organoleptic characteristics :- i) Colour ii) Odour iii) Taste	Light yellow Characteristic Bitter	
General and Microchemical tests (with powder/Aq. Ext.):- Saponins : (Powder + dist. water)	Frothing	+
Tannins (Powder+FeCl ₃ sol)	Dark coloration	+
Anthraquinones: a) (Powder + Ammonia sol.) b) (Powder + 5% w/v KOH sol.)	Amonical layer showed no pink colour No blood red colour	-
Mucilage (Powder + dist. water)	Swelling	+
Carbohydrates : (Powder + Molisch's reagent)	Violet ring formed	+
Alkaloids : (Powder + General Reagents) a) Dragandroff's reagent b) Hager's reagent c) Mayer's reagent d) Wagner's reagent	(a) Brownish red colour (b) Yellow colouration (c) Creamy ppt (d) Orange brown ppt	+
Oils (Powder + Filter paper)	No greasy spot	-
Steroids (Powder + Conc.H ₂ SO ₄)	Reddish brown colour	+
Starch (Powder + Iodine)	Blue colour	+
Flavonoids (Powder +Aq. NaOH sol.)	No dark yellow colour	-

CONCLUSION

In the present study, some pharmacognostical parameters such as Macroscopical characteristics, florescence analysis of drugs as well as preliminary examination of the root powder for organoleptic characteristics and general chemical tests have been carried out. In conclusion these studies can be used successfully in commercial and routine laboratory works for identification of powder drug from *Fagonia schweinfurthii* prior using in any herbal formulations.

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