Ancient Science of Life Vol : XXVI (2) October, November, December – 2004 Pages 92 - 96

STUDIES ON PHARMCOGNOSTICAL FEATURES OF *Zizyphus mauritiana* LINN. ROOT (FAMILY: RHAMNACEAE)

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Received: 10-2-2004 Accepted: 28-8-2004

ABSTRACT:

Description of the root of the plant, Zizyphus mauritiana Linn. the microscopical characters of the powdered root, its behavior on treatment with different chemical reagents, and the fluorescence character under ultraviolet light after treatment were studied to fix some pharmacognostical parameters. Preliminary phytochemical screening on the various extracts of the root of the plant was also performed. These studies were carried out to identify this plant for further research work.

INTRODUCTION

Zizyphus mauritiana Linn. (Family: Rhamnaceae) Sin (Chinese species)- Zizyphus jujube Linn. is a low, branched, deciduous tree with spreading crown, dark greenish black bark having irregular crack and strong reddish hardwood. Leaves are oblong and elliptic; flowers are greenish yellow in axillary dense, fascicles or sessile or short peduncle cymes. It is known as Ber (Hindi), Indian jujube (English), Bore (Kannada), Illanta (Malayalam), Badarh (Sanskrit). It is found throughout India, in dry deciduous forests up to 1500 m. Unripe fruits are used to pacify "vata" and it aggravates "Kapha" according to Ayurveda. Roots are used for fever, wound, ulcer, as a purgative, in promotion of menstruation, diarrhea, gout and rheumatism. Bark cures boil and is used in the treatment of diarrhea and dysentery it is also used as animal fodder and in treatment of asthma. Whole plant is used for cooling, as aphrodiasic and tonic (1). Considering the various therapeutic efficacy and usage in traditional practice, it was though desirable to investivate some pharmacognostical parameters for further identification of the active plant material. The present investigation deals with studies on some important pharmacognostical profiles of the root in its powdered form.

MATERIALS AND METHODS

Plant material

Zizyphus mauritiana Linn. Roots were collected from the forest land of Jharkhand in the month of October, 2003, and were identified by the Central National Herbarium, Botanical Survey of India, Botanical Garden, Howrah-711103, West

Bengal. A voucher specimen [Ref No. CH/I (62)/2003 – Tech II /3423] of the plant herbarium has been preserved in the laboratory for further reference. After collection, the roots were cut into small pieces and dried properly. The dried roots were then ground to coarse powder by passing through the 40 –mesh sieve.

Reagents

All the reagents were of analytical grade and obtained from S.D. Fine Chemicals Ltd., Mumbai.

Methods

The macroscopic characters (color, size, shape, odour, surface, texture, taste) of the root of the plant were observed (2). The microscopical characters of the powdered root were also observed under 40x10 magnifications following the standard method (3). The physical constant values of the plant were determined by standard pharmacopoeial methods (4). The behaviour of the powdered root with different chemical reagents and its fluorescence characteristics under ultraviolet (UV) light at 254 nm were studied (5). Preliminary phytochemical tests for the various extracts of the root were performed by using specific reagents (3, 6). Further the extractive values of the methanolic extract of the root of Z. *mauritiana* were determined.

RESULTS AND DISCUSSION

The macroscopical characters of the root are shown in Table 1. The microscopical characters as observed in the powdered root show the presence of lignified phloem fibres and cork cells. The various physical constant values of the plant are reported in Table 2. The behavior of the powdered root on treatment with different chemical reagents admits fluorescence characters under UV light are presented in Table 3 and Table 4 respectively. Phytochemical screening of the plant reveals the presence of the active constituents as reported in Table 5. The methanol extract of the root of the plant is found to be brown in colour and its yield value is 19.9% w/w.

CONCLUSION

The various studies on *Z. mauritiana* Linn. Root including its microscopical and macroscopical characters, physical constant values, behavioral studies of the powdered plant root with different chemical reagents, its fluorescence analysis, preliminary phytochemical screening of the various extractives of the plant and the extractive values of its methanol extract will obviously help in proper identification and authentification of plant part and its powder form for further studies.

ACKNOWLEDGEMENT

The authors are grateful to the scientist-in-charge, Botanical Survey of India, Botanical Garden, Howrah, for the identification of the plant.

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Table – 1 Macroscopic Characters Of The Root Zizyphus mauritiana Linn.

COLOR	: Dark brown in color.
SHAPE	: Tuberous, cylindrical with tapering towards end.
SIZE	: About 100cm in length.
TEXTURE	: Smooth and fibrous.
TASTE	: Slightly astringent.

Table – 2 Physical Constant Values Of Root Zizyphus mauritiana Linn.

CONSTANT	**YIELD IN PERCENTAGE (W/W)**
Total ash	14.2
Acid insoluble ash	7.6
Water soluble ash	11.3

Table - 3 Behavioral Pattern Of The Powdered Sample Of Zizyphus mauritiana Root On Treatment With Different Reagents

CHEMICAL REAGENT	COLOR DEVELOPED
Powder as such	Light brown in color
Picric acid (saturated aqueous solution)	Yellowish in color
Concentrated Nitric acid	Reddish brown in color
Dilute Nitric acid	Reddish brown in color
Concentrated Hydrochloric acid	Dark brown in color
Dilute Hydrochloric acid	Dark brown in color
Sulphuric acid	Dark brown in color
Glacial acetic acid	Dark brown in color
Ferric chloride	Black brown in color
Aqueous iodine solution	Reddish brown in color
Dilute sodium hydroxide	Reddish brown in color
Antimony trichloride	Reddish brown in color

Table – 4
Fluorescence Analysis Of Powdered Drug (254 nm)

TREATMENT	COLOR DEVELOPED UNDER UV LIGHT	COLOR DEVELOPED UNDER VISIBLE LIGHT
1. Powder as such	Black	Green
2. Powder mounted with nitrocellulose	Black	Green
3. Powder treated with sodium hydroxide in		

methanol	Black	Green
4. Powder treated with sodium hydroxide in methanol, dried and mounted with nitrocellulose	Black	Green
5. Powder treated with sodium hydroxide in water	Black	Green
6. Powder treated with sodium hydroxide in water, dried and mounted with nitrocellulose	Black	Green
7. Powder treated with sodium hydroxide acid	Black	Green
8. Powder treated with sodium hydroxide acid dried and mounted with nitroccllulose	Black	Green
9. Powder treated with nitric acid diluted with equal volume of water.	Black	Green

Table – 5
Preliminary Phytochemical Tests for various Extracts of Zizyphus mauritiana Linn. Root.

Extract	**Alkaloid**	**Reducing sugar**	**Tannin**	**Flavanoid**	**Steroid**	**Saponin**	**Anthraquinone**
Petroleum Ether (60 – 80)	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-
Chloroform	-	+	-	-	-	-	-
Methanol	+	-	-	-	-	-	-
Water	-	-	-	-	-	-	-

”+” = Present; ‘-‘=Absent