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Research Article

Evaluation of Preliminary Phytochemical and Pharmacognostic Studies on the Bark of *Randia spinosa* Thund.

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ABSTRACT

The bark of *Randia spinosa* (Madanphal) is reported to have great medicinal value. Pharmacognostic evaluation including examinations of morphological and microscopic characters, ash value, powder analysis, and extractive values were carried out.

Keywords: *Randia spinosa*, Pharmacognostic study.

INTRODUCTION

In Indian system of medicine *Randia spinosa* , family Rubiaceae is an important medicinal plant, popularly known as emetic nut. A deciduous thorny, rigid shrub or tree, up to 9 m. in height and 1.2 m. in girth with a bowl of 2-3 m. This plant is found throughout India up to an altitude of 1,900 m. Bark Thin and smooth, greyish brown in colour, rough, scaly, soft pink or pale red, flowers white later turning yellow, fragrant, solitary, berry like, fleshy, containing angular flat seeds.

Most of the parts of *Randia spinosa* are of medicinal importance and used traditionally for the treatment of various ailments. The roots of the plant are considered as insecticidal and insect repellant. The seeds of the plant are used as a tonic to induce appetite. The bark is astringent and is given in diarrhoea and dysentery. An infusion of the bark is used as an emetic. It is also reported to be abortifacient.

As per Ayurvedic claims, *Randia spinosa* is bitter, aphrodisiac, emetic, antipyretic, carminative, alexiteric and cures abscesses, ulcers, inflammations, tumors, skin-diseases, piles etc. The fruits of the *R. spinosa* are most popular and considered as good remedy in tvakdosa (skin diseases), udararog (gastrointestinal tract diseases), vrana (wounds) etc.

There are over 400 different tribal and other ethnic groups in India. Each tribal group is having their own tradition, folk language, beliefs and knowledge about use of natural resources as medicines. In Chhattisgarh, very few traditional healers are aware of medicinal properties and uses of *Randia spinosa* in the tribal belt, it is used as a fish poison. To treat gastric troubles, the healers of Rajnandgaon region, recommend dry fruit powder with fresh milk internally. The traditional healers of Kondagaon region recommend it in the

treatment of breast related diseases. The traditional healer of Mudpar village use the dry fruit powder in the treatment of liver related diseases. The natives of Chhattisgarh use this fruit with sugar, before sunrise, internally in the treatment of Adhasisi (Migraine). In Ceylon, the root decoction is taken for diarrhoea and biliousness. In Indo-China, the powdered fruit is used as an emetic; the pounded root is employed to kill fish. The seeds are said to be used as a tonic to induce appetite. The fruit in combination with other drugs is prescribed for the treatment of snake- bite. The fruit is one of the ingredients which enter into the preparation of the Tanjore Pill, a famous snake remedy. [1-5]

MATERIALS AND METHODS

Plant Material

Collection and Identification of plant materials

The bark of *Randia spinosa* was collected in the month of January from the herbal garden of CIMAP, Lucknow.The bark of *Randia spinosa* was identified and authenticated at from National Botanical Research Institute, Lucknow under the Ref. No.: NBRI/CIF/189/2011 dated 10/01/2011.

Barks were shed dried and powdered to 40-mesh size. The physicochemical parameters like extractive values, florescence characteristics of powdered bark and bark extract, preliminary phyto-profiling were determined as per WHO guidelines. The average percentage w/w of the ash content and the extractive values were determined. The Fluorescence analysis was carried out according to the reported method where in the colour of the powdered bark and bark extract were also studied under ordinary and ultra-violet light at 366 nm. Powdered bark material was successively extracted with Petroleum ether, Chloroform, Ethyl acetate, Acetone, Ethanol, Methanol, water in soxhlet apparatus and was subjected for identification of various plant constituents. [6-17]

RESULTS AND DESCUSSION

Physicochemical values and Fluorescence characters of the plant powder under ordinary light and UV light (UV 366 nm) are determine (Table 1, 2 (a, b)). Ash values of a drug give an idea of the earth matter or the inorganic composition and other impurities present along with the drug. The percentage,of total ash, acid insoluble ash. Extractive values are primarily useful for the determination of exhausted or adulterated drugs. The water soluble and alcohol soluble

Table1: Physicochemical characterization of bark of *Randia spinosa.*

WHO Parameters	Average values % w/w Bark
Total ash	38%
Acid insoluble ash	23.5%
Alcohol extractive value	2.86%
Water extractive value	4.3%
Loss on drying	6%

Table 2(a): Florescence characteristic of bark powder of *Randia spinosa.*

Treatment	Ordinary light	U.V. light
Powder as such	Brown	Brown/Blak
Powder + 1 N NaOH (methanol)	Brown	Brownish green
Powder + 1 N HCl	Light brown	Dark brown
Powder +1 N NaOH (water)	Brown	Brown
Powder + HNO_3 (1:1)	Yellowih brown	Yellowish black
Powder + H_2SO_4(1:1)	Black	Greenish black
Powder + Ammonia	Brown	Yellowish brown
Powder + Iodine	Dark brown	Brown
Powder + Acetic acide	Brown	Brown
Powder + 5 % Ferric chloride	Yellow	Yellowish green

Table 2(b): Florescence characteristic of bark extract of *Randia spinosa.*

Extract	Ordinary light	U.V. light
Petroleum ether (40-60 °C)	Yellow	Yellow
Chloroform	Green	Brown
Ethyl acetate	Red	Brownish black
Acetone	Red	Brown
Ethanol	Brick red	Black
Methanol	Red	Light yellow brown
Aqueous	Dark black	Black

extractive values have been determined. Preliminary phytochemical screening revealed the presence of carbohydrates, glycosides, saponin, flavonoids, steroids, phenolic compounds, and proteins (Table 3 and 4).

Table 3: Priliminary phytoprofile for bark of *Randia spinosa*.

Extract	Colour	State	% Yield
Petroleum ether	Yellow	Sticky	0.16%
Chloroform	Green	Non sticky	0.8%
Ethyl acetate	Red	Non sticky	2%
Acetone	Red	Non sticky	5%
Ethanol	Red	Non sticky	13.33%
Methanol	Red	Non sticky	5.3%
Aqueous	Brownish black	Non sticky	3.1%

Table 4: Phytochemical analysis of different extracts of *Randia spinosa*.

Compound	P	C	EA	A	E	M	A
Alkaloids	-	-	-	-	-	-	-
Glycosides	-	-	-	+	+	+	-
Steroids	+	+	+	+	+	+	-
Saponins	-	-	-	-	+	+	+
Flavonoids	-	-	-	+	+	+	-
Carbohydrates	+	+	+	+	+	+	+
Proteins	-	-	-	-	+	+	+
Amino acids	-	-	-	-	-	-	-
Phenolic compounds	-	-	-	+	+	+	-
Lipids	+	-	-	-	-	-	-
Volatile oils	+	-	-	-	-	-	-

Indication (+) = Present, (-) = Absent.

P- Pet. ether, C- Chloroform, EA- Ethyl acetate,

A- Acetone, E- Ethanol, M- Methanol, A- Aqueous

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