



Full Length Research Article

PHARMACOGNOSTIC EVALUATION OF FRUIT OF *WRIGHTIA TINCTORIA R.Br*

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ARTICLE INFO

Article History:

Received 19th October, 2016
Received in revised form
21st November, 2016
Accepted 20th December, 2016
Published online 30th January, 2017

Key Words:

Wrightia tinctoria R.
Br, pharmacognostic analysis,
Ultraviolet light.

ABSTRACT

The present study on pharmacognostic activities of fruit of *Wrightia tinctoria R.Br* such as fluorescence analysis of powder crude drug and their chemical behavior, consistency, color and pharmacognostic analysis of fruit extracts of *W. tinctoria R.Br* were studied by using methanol, petroleum ether and ethyl acetate solvents. The result reveals that, the crude drug of fruit of *W. tinctoria R.Br* was found sticky mass in nature in petroleum ether and ethyl acetate extracts. While, semi solid mass was found in methanolic extracts. The color in day light was found reddish in presence of methanolic extract while cream color in petroleum ether and pale yellow coloration was observed in case of ethyl acetate extract. The coloration were variable according to differentially in short ultraviolet and long ultraviolet light.

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INTRODUCTION

The *Wrightia tinctoria R.Br* widely distributed in Kinwat forest in Nanded district of Marathwada region of Maharashtra. The Kinwat forest is deciduous and rich with huge medicinal plants in valleys, mountain as well as plain (Naik 1998, Wadood Khan 1985 and Zate 1983). *W. tinctoria R.Br* belongs to family *Apocynaceae*, is a small deciduous tree is well known by Sweet indrajao have been extensively used in Indian system of medicine like Ayurveda, Sidhha and Unani for the control of common ailments of human beings such as Jaundice, malaria, psoriasis and many others (Shinde, 2008). The bark and leaves of *W. tinctoria R.Br* were used traditionally by tribes of Maharashtra, India for anthelmintic purpose (Dama, 2011). According to Kirtikar and Basu (1975) Anonymous (1976) reported, bark, seed and leaf used in different system of medicine not only that also potential to therapeutic significance as well as antimicrobial activity. The most important factor needed is to derive the maximum benefit from the traditional system of medicine for providing adequate health care survive to rural people (Ghani, 1990). As per the phytochemical reveals the fruit extract of *W. tinctoria R.Br* constituents a major medicinally ingredient as a natural product having promising against different pathogenic diseases (Shinde 2008).

On the other hand phytochemicals play a role in biological activities (Bharat, 2014).

MATERIALS AND METHODS

Pharmacognostic Study

In the present study the selected plants parts are:

- *Wrightia tinctoria R.Br*. - Fruit
- The fruits of *Wrightia tinctoria R.Br*. were subjected to various pharmacognostic studies.

Macroscopical characters of crude drugs

Sl. No.	Name of crude drug	Colour	Plant part	Taste	Surface
1)	<i>Wrightia tinctoria R.Br</i>	Green	Fruit	Characteristics	Rough

Microscopic Character

After physical evaluation, fruit of *W. tinctoria R.Br* were crushed to form the powder which was then passed through sieve no. 40 to get uniform particles. Then the uniform powder was subjected to standardization for various pharmacognostic studies. Determination of total ash (Extractive values Anonymous; RRL, Jammu, IDMA, Vol-I.1998). Accurately

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weighed 3 g of powdered drug was taken in silica dish which was previously ignited and weighed. Incinerated it by gradually increasing the heat-not exceeding 450 °C until it was free from carbon, cooled and weighed again. The percentage of total ash was calculated with reference to the air-dried drug.

$$\% \text{ Total ash value} = \frac{\text{Wt. of total ash}}{\text{Wt. of crude drug taken}} \times 100$$

Determination of acid-insoluble ash

The ash was boiled for 5 to 10 minutes with 25 ml of dilute hydrochloric acid. The insoluble matter was collected in a dry crucible or on an ash less filter-paper, washed with hot water, ignited and weighed. The percentage of acid-insoluble ash was calculated with reference to the air-dried drug.

$$\% \text{ Acid insoluble ash value} = \frac{\text{Wt. of acid insoluble ash}}{\text{Wt. of crude drug taken}} \times 100$$

Table 1. Fluorescence analysis of fruit extracts of *W. tinctoria R.Br*

Sl. No.	Treatment	Visible light	Ultra violet light
1	Powder as such	Light green	Light brownish green
2	Powder + Sulphuric acid	Reddish brown	Light brown
3	Powder + Ethanol	Brown	Dark brown
4	Powder + 1N Sodium Hydroxide	Light yellowish green	Yellowish green

Table 2. Chemical analysis of fruit extracts of *Wrightia tinctoria R.Br*

Sl. No.	Treatment	Observations
1	Powdered as such	Light green
2	Powder + 2% ferric chloride	Reddish brown
3	Powder + 10% sodium Hydroxide	Yellow
4	Powder+ sodium hydroxide+ water	Yellow
5	Powder + 5% potassium hydroxide	No Change
6	Powder + sulphuric acid	Reddish brown
7	Powder + Nitric acid	No change

Determination of water soluble ash

The ash was boiled for five minutes with 25 ml of water and collected insoluble matter in a dry crucible, which was washed with hot water and ignited to constant weight at a low temperature. The weight of insoluble matter is subtracted from the weight of ash. The water-soluble ash was represented by difference in the weight. The percentage of water-soluble ash was calculated with reference to air-dried drug.

$$\% \text{ Water soluble ash value} = \frac{\text{Wt. of total ash} - \text{Wt. of water insoluble ash}}{\text{Wt. of crude drug taken}} \times 100$$

Determination of alcohol-soluble extractives

5 gm of coarsely powdered air-dried drug was macerated with 100 ml of alcohol in a closed flask for 24 hours and shaken frequently during six hours and allowed to stand for 18 hours. It was filtered rapidly taking precaution against the loss of alcohol. 25% of the filtrate was evaporated to dryness in a tarred shallow dish dried at 105°C and weighed. The percentage of alcohol soluble extractives was calculated with reference to the air-dried drug.

Determination of water-soluble extractives

Proceeded as directed for the determination of alcohol soluble extractive, used chloroform water, I.P., instead of alcohol.

Loss on drying (moisture content)

About 5 gm of powdered drug was accurately weighed in a petridish and kept in a hot air oven at 110°C. After cooling in desiccator, the loss in weight was recorded. This procedure was repeated till constant weight was obtained.

$$\text{Loss on drying (\%)} = \frac{\text{Loss in weight} \times 100}{W}$$

Where, W = Weight of the fruit powder in gm

Behavior of powder by different chemical reagents (Harbone JB.1973)

Behavior of chemical reagents was performed on the powdered drug to detect the phytoconstituents with color change under ordinary day-light and ultra violet light.

RESULTS AND DISCUSSION

Fluorescence analysis of fruit extracts of *Wrightia tinctoria R.Br*

Anatomically, T.S. of *W. tinctoria R.Br* was studied by using the toluidine blue and safranin stain and observed vascular bundle with pith and addition to cortex and stone cells. In order to known fluorescence analysis of powdered crude drug and their chemical behavior, consistency, colour and pharmacognostic analysis of fruit extracts of *W. tinctoria R.Br* were studied by treating with different chemicals such as Sulphuric acid, ethanol, sodium hydroxide. The results of fluorescence analysis of powdered crude drug of *W. tinctoria R.Br* was summarized in the Table 1. The results are very considerable according to treatment with chemicals in presence of visible and ultra violet light. The powder itself has the light green color in presence of visible light and light brownish green in ultraviolet light, treatment with 1N sodium hydroxide was observed the yellowish green color in visible light and also in ultra violet light. It is interesting to note that, the crude drug treating with sulphuric acid reddish brown coloration was observed in presence of visible light and light brown coloration in ultra violet light. While, the crude drug treated with ethanol which was found brown color as a natural

color in visible light and dark brown color under when it is in ultraviolet light.

Chemical analysis of fruit extracts of *Wrightia tinctoria* R.Br

This variation of the crude drug of fruit of *W. tinctoria* R.Br was observed by treatment of different chemicals such as 2% Ferric chloride, 10% Sodium hydroxide, 5% Potassium hydroxide, Sulphuric acid and Nitric acid in order to understand their effect on behavior of crude powdered drug of *W. tinctoria* R.Br and the results were recorded in the table- 2. Basically the powder itself has light green color, when treating by 2% Ferric chloride and Sulphuric acid which look like reddish brown coloration. While, treating with 10% Sodium hydroxide, coloration was yellow. Whereas, treating with 5% Potassium hydroxide and nitric acid the results does not responded to any change in coloration.

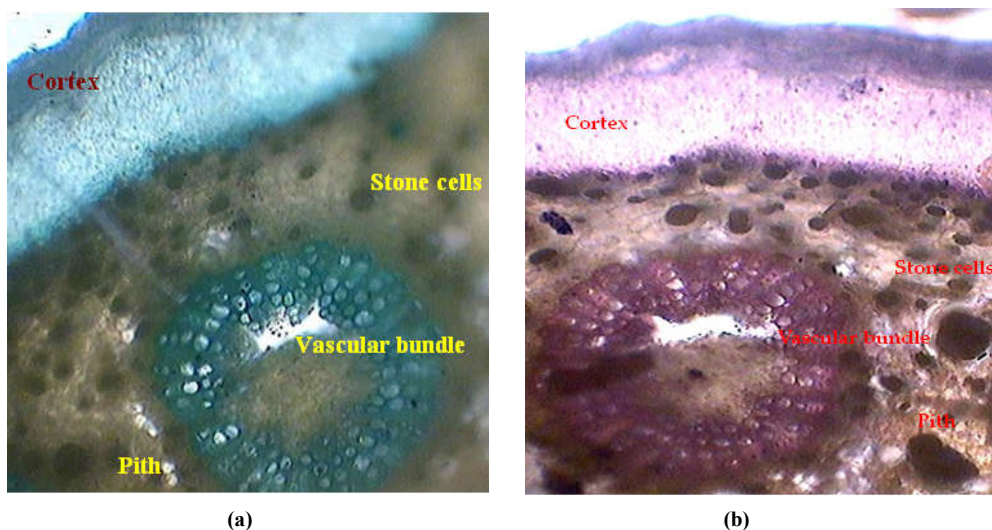
crude fruit extracts in day light was found reddish in the methanolic extract while, cream colour in petroleum ether and pale yellow coloration was observed in case of ethyl acetate extracts. It is very important to note that influence of short and long ultra violet light on the test extracts, which was yellow brown coloration in case of short ultra violet light and pale yellow colour in long ultra violet light in presence of methanolic extract while yellow in short ultraviolet light and brown coloration in long ultra violet light in acetate extracts. Extract of petroleum ether was showed cream coloration in presence of both the tested lights.

Pharmacognostic parameters of fruit extracts of *W. tinctoria* R.Br

Powdered crude fruit drug of *W. tinctoria* R.Br utilize to determination of total ash, acid insoluble ash value, water soluble ash, extractive values and moisture content and the

Table 3. Fluorescence analysis of fruit extracts of *Wrightia tinctoria* R.Br

Sl. No.	Extracts parameters	Methanol	Petroleum ether	Ethyl acetate
1	Consistency	Semi-solid mass	Sticky mass	Sticky mass
2	Colour (daylight)	Dark brown	Brownish yellow	Dark brown
3	Short UV	Yellow brown	Cream	Yellow
4	Long UV	Pale yellow	Cream	Brown



**Fig. 1. (a) Anatomy of Transverse section of Fruit of *Wrightia tinctoria* R.Br. (Toluidine Blue stain)
(b) Anatomy of Transverse section of Fruit of *Wrightia tinctoria* R.Br. (Saffranin stain)**

Table 4. Pharmacognostic parameters of the fruit extracts of *W. tinctoria* R.Br

Sl. No.	Physical Constants	Value (%w/w)
1	Total ash	9.20
2	Acid insoluble ash	0.39
3	Water soluble ash	1.33
4	Alcohol soluble extractive values	18.94
5	Water soluble extractive values	14.27
6	Moisture content	11.80

Fluorescence analysis of fruit extracts of *W. tinctoria* R.Br

The consistency, coloration and fluorescence analysis of different extracts of powdered crude fruit drug of *W. tinctoria* R.Br were studied by using different solvents such as Methanol, petroleum ether and ethyl acetate extracts and the results are summarized in the table- 3. The consistency analysis of extracts of powdered crude fruit drug of *W. tinctoria* R.Br was found to be sticky mass in nature in both ethyl acetate and petroleum ether extracts. Whereas, semi-solid mass was found in methanolic extract. The colour of the

results were summarized in the table- 4. The total ash value of powdered crude fruit drug of *W. tinctoria* R.Br was found to be 9.20 %w/w. The maximum value of water soluble ash was found as compared with acid insoluble ash, alcohol soluble extractive values and water soluble extractive values. Among these, the alcohol soluble extractive values was found to be maximum than water soluble extractive values. It is significant to note that moisture content of the test samples was found to be 11.80 % w/w.

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