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RESEARCH ARTICLE

STUDIES ON DETERMINATION OF FLAVONOIDS FROM *WRIGHTIA TINCTORIA R. BR* AND *AMORPHOPHALLUS CAMPANULATUS (ROXB)*

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ABSTRACT

Amorphophallus campanulatus (Roxb.) is an important tuberous plant with medicinal potential belongs to Family *Araceae*, largely cultivated throughout the plains of India. The *A. campanulatus (Roxb.)* contains phytochemicals such as flavonoids, alkaloids, steroids, phenol and tannins. The *Wrightia tinctoria R.Br* native to India and have reported to contains presence of glycoflavones, iso-orientin, phenolic acid and also various compounds like lupeol, stigmaterol and competosterol. The present work intends concentrated to determination of flavonoids present in corm of *A. campanulatus (Roxb.)* and fruit of *Wrightia tinctoria R.Br.* and the results indicated that, methanol corm extract of *A. campanulatus (Roxb.)* and fruit extract of *Wrightia tinctoria R.Br* have a presence of quantitative amount of flavonoids that are 90 mg/g, 88 mg/g of Rutin equivalent respectively while, petroleum ether extracts showed poor amount of flavoinds.

INTRODUCTION

A. campanulatus (Roxb.) of family *Araceae* commonly known as Suran is a tuberous, stout, indigenous herb. The tubers contain phytoconstituents and an active diastatic enzyme and flavonoids (Shilpi. *et al.*, 2005), alkaloids, steroids, phenol and tannins (Shinde S. R. 2008). It is multipotentially for various diseases (ethnomedicine) as well as antimicrobial activity (Alam Khan *et al.*, 2008), hepatoprotective activity and antitumor activity. *Wrightia tinctoria R.Br* is a small deciduous tree of the family *Apocynaceae*. It distributed in Central India, Burma and Timor (Chary 1980). It extensively used in India medicine system. The fresh leaves are pungent and chewed for relief from toothache (Kirtikar and Basu, 1997; Annonymous, 1996). The bark and seeds of *Wrightia tinctoria R.Br* are highly beneficial to ethno-medicinal significance (Chavan 2002). The various chemical constituents determined and isolated from various plant parts has been reported Lupeol, stigmaterol, campesterol, rutin (Murugnandan *et al.*, 1998) Triacantonol and *Wrightia* (Rangaswami *et al.*, 1962; Ritu Tomar *et al.*, 2008; Bharat N.S. 2015).

MATERIALS AND METHODS

Tests for flavonoids

The flavonoids are structurally derived from the parent substance called flavone.

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The flavonoids, which occur in free form or bound to sugars, are called as glycosides. For this reason, when analyzing flavonoids, it was usually better to examine the flavonoids in hydrolyzed plant extracts.

Preparation of test solution

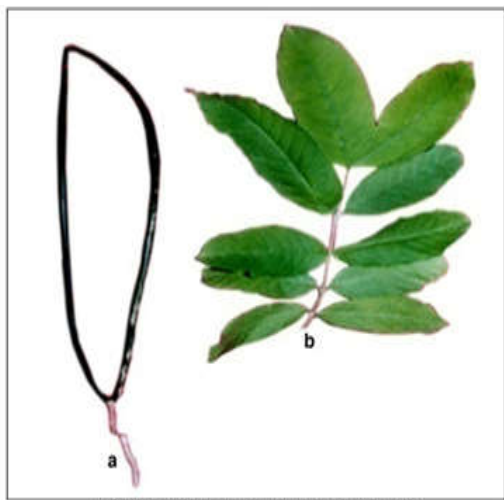
Small amount of extract with equal volume of 2M hydrochloric acid was added and heated the test tube for 30-40 min at 100^oC, allowed to cool, filtered and extracted with ethyl acetate. The ethyl acetate extract was concentrated to dryness, followed the test for flavonoids to ethyl acetate fraction by dissolving the residues with ethyl acetate.

Shinoda test: Test solution with few fragments of magnesium ribbon and concentrated. hydrochloric acid showed pink to magenta red colour.

RESULTS AND DISCUSSION

Determination of flavonoids

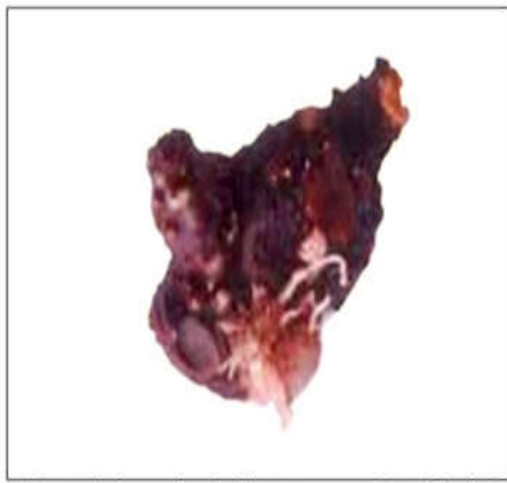
In order to investigate quantity of flavonoids by using absorbance of different concentrations (20 to 100 µg/ml) of Rutin and the results are summarized in the table- 1. A calibration curve shows linear correlation at measured concentrations. Table- 2 represents the quantity of flavonoids in mg per gram of Rutin equivalent determined for the test extract. The results indicate that methanol fruit extracts of *W. tinctoria R.Br* and corm of *A. campanulatus (Roxb.)* contain maximum amounts of flavonoids as 90 mg/g and 88 mg/g of Rutin equivalents respectively while minimum amount of flavonoids in presence of petroleum ether extract.



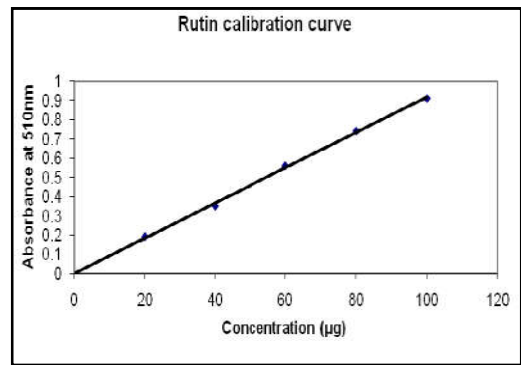
Wrightia tinctoria R.Br (a) Fruit (b) Twig



Amorphophallus campanulatus (Roxb.)



Corm of Amorphophallus campanulatus (Roxb.)



Graph 1. Calibration Curve for Rutin

Table 2. Quantity of Flavonoids (Rutin equivalents) found in each extract

Sl. No.	Test Sample	mg/g of Rutin equivalents
1	Methanolic extract of <i>Wrightia tinctoria</i> R.Br	90 mg/g
2	Petroleum ether extract of <i>Wrightia tinctoria</i> R.Br	14 mg/g
3	Ethyl acetate extract of <i>Wrightia tinctoria</i> R.Br	22 mg/g
4	Methanolic extract of <i>Amorphophallus campanulatus</i> (Roxb.)	88 mg/g
5	Petroleum ether extract of <i>Amorphophallus campanulatus</i> (Roxb.)	16 mg/g

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Table 1. Absorbance table for different concentrations of rutin

Sl. No.	Concentration of Rutin (in µg)	Optical Density (at 510nm)
1	Blank	0
2	20	0.19
3	40	0.35
4	60	0.56
5	80	0.74
6	100	0.91