

Phytochemical analysis of *Rauvolfia tetraphylla* L. from Marathwada region of Maharashtra

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Abstract

Rauvolfia tetraphylla L. is important medicinal plant. It is used in various traditional as well as modern medicine. *Rauvolfia tetraphylla* is rich source of various phytochemical like alkaloids, phenols, saponins flavonoids and tannin. whole plant is medicinally important but root is essential source of phytochemical. now day climate change and overexploitation of plant for medicine. This plant is become endangered. It is alternative source of reserpene. Plant root is beneficial source for extraction of phytochemical.

Key Word: Phytochemical, *Rauvolfia tetraphylla*.

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Figure 1: IG: *Rauvolfia tetraphylla* L.

INTRODUCTION

Rauvolfia tetraphylla L. is plant of apocynaceae family Its genus is *Rauvolfia* this genus have number of species. tetraphylla is important species¹. It contains various type of phytochemical which are medicinal valuable. *Rauvolfia tetraphylla* contain alkaloid and it called as *rauvoltetraphylla* A-E It has tremendous importance in various medicine. It show anticancer antihypertension, and sedative activity. It is used in folklore and traditional medicine²

MATERIAL AND METHOD

The collection of plant: Plants *Rauvolfia tetraphylla* L. collected from garden of Vasant Rao Naik Marathwada vidyapeeth Parbhani and Botanical garden of Science College Nanded and third plant collected from Sangam Nursery latur

Extract preparation from *Rauvolfia tetraphylla* L. : soxhlet extractor: The dried root were crushed into fine particles (powder) using a mixer. the powder plant material (250gm) was packed in a soxhlet. Extract obtained was passed through the whatman filter paper no 1 and the methanol was evaporated at 40°C with help of heating mantle and dried in a desiccator.³

Preparation of aqueous extract of plant *Rauvolfia tetraphylla* plant L: plant leaves, stem and root collected from healthy plant and all plant material washed under tap water and rinsed with distilled water. The washed

plant material kept in hot air oven for 3 days at 60°C temperature. As per respective plant parts powders were prepared in mortar and pestle. Prepared powders preserved in separate airtight container for leaves, shoot and root. At 40°C until used. 10 gram powdered sample was soaked in distilled water for 12 hours at room temperature. the extract then filtered and concentrated to final volume to a final volume of 50 ml and subject to phytochemical analysis.⁴

Analysis of phytochemical on basis of phytochemical test:

- Alkoids:** Take 10 ml methanol and add 200 mg plant extract. after boiling filter it. 1% HCL added with adding 6 drops of Dragandroff Reagent and brown red precipitate was taken as a positive test.⁵
- Saponins:** Take 200 mg plant added 0.5 ml filtrate was diluted to 5ml with D/W shake well for 2 minutes. Formation of stable foam indicates the presence of saponins.⁵
- Flavonoids:** 5 ml dilute ammonia solution was added followed by concentrated H₂SO₄. A yellow colouration indicated the presence of flavonoids.⁶
- Tannins:** 200 mg of plant powder added in boiled 10 ml D/W and add few drops of FeCl₃ were added to filtrate. A blue black precipitate indicate the presence of tannins.⁷
- Total phenols:** Take 10 mg extract in test tube add few drops of ferric chloride. Formation of bluish black colour indicate the presence of total phenol.⁸

Quantative estimation of phytochemical

- Quantative determination of Alkaloid:** Add 5gram of dried root powder in 10% acetic acid solution in ethyl alcohol, kept at 28°C for 4hours filtered through whatman no 42. There after alkaloid was precipitated by concentrating the filtrate to one drops of concentrated aqueous NH₄OH were added, final precipitate was washed with 1% ammoniasolution and dried at

80°C in the oven. The content of alkaloid was calculated and expressed as mg/gm of sample.⁹

- Determination of Flavonoids:** As per Harborne methods. 5 gram of root powder was boiled in 2M HCL for 30 minutes under reflux and filtered after cooling. equal volume of ethyl acetate was then added drop wise in filtrate the weight of precipitate flavonoid was determined and reported as mg/g.¹⁰
- Determination of Tannins: As per swain methods.** Root powder of plant kept in a beaker containing 20 ml of 50% methanol covered with parafilm and then heated at 80°C in water bath for hour with continuous stirring. The extract was quantitatively filtered using a double layered whatman no-1 filter paper and rinsed by 50% methanol. 1ml of sample extract was treated with 20ml distilled water 2.5 ml. Folin Denis Reagent and 10 ml of 17% Na₂ CO₃ for the development of a bluish green colour and was allowed to stand for 20 minutes. the absorbance was measured at 760 nm and amount of tannin¹¹
- Determination of Saponins:** As per Brunner methods. Isobutyl alcohol which is 100ml was added to 1gram of finely powered and stirred for 5 hours. 20 ml of 40% saturated solution of Magnesium carbonate was added to the mixture and filtered. 2ml of 5% FeCl₃ solution and 50 ml volume of distilled water was added to 1 ml of colourless (blood red) development. the absorbance of samples along with the standard were read at 380 nm and calculated in mg/gm standard saponin solution was prepared in the reference range of 0-10 ppm.¹²
- Determination of phenols:** 5 gram of the powdered root was boiled with 50 ml of either for 15 minutes and distributed in the ratio 1:2 (extract : distilled water) 2ml of ammonium hydroxide followed with 5ml of pentenol was added to it and incubated at the room temperature for 30 minutes the absorbance was read at 50 nm as described obodoni and ochuko.¹³

OBSERVATION

Table 1: Quantative estimation of phytochemical of Rauvolfia tetraphylla

Sr.No.	Phytoconstituent of Rauvolfia tetraphylla L.(root)	R.t. Plant from Parbhani Extract Amount in mg/gram		R.t.Palnt from Nanded extract Amount in mg/gram		R.t.Plant from latur Extract Amount in mg/gram	
		Aq. Extr.	Meth. Ext.	Aq Ext	Meth.ext.	Aq.ext	Meth ext
01	Alkoids	7.62	10.6	8.5	5.85	11.96	17.13
02	Flavonoids	20	27.	14.	17.	12.	16.
03	Saponins	4.65	5.40	4.33	5.68	3.8	6.9
04	Tannins	4.54	9.11	3.44	5.98	4.63	7.9
005	phenols	7.23	19.	19.34	13.8	10	18.

R.t.= Rauvolfia tetraphylla L Aq.ext= aqueous extract,meth ext= methanolic extract

RESULT

Preliminary phytoconstituent investigation of crude extract of leaf stem and root. It signifies the highly medicinal value. Its determination study is very important inspiration in pharmacology for discovery of novel drugs. From present study the highest amount of content of phytochemical is in roots of plant In *Rauvolfia tetraphylla* secondary metabolites are mainly present these are alkaloids, Saponins, Flavonoids Total phenols and tannins.

DISCUSSION

On basis of result obtained in present study. It could be said that. *Rauvolfia tetraphylla* have tremendous medicinal values so that phytochemical isolated are very important and as a source of inspiration for novel drugs discovery. From above research work it can be concluded that *Rauvolfia tetraphylla* L. plant has strong potential to be used in the area of pharmacology and as a perspective in designing valuable drugs. Quantitative analytical value of *Rauvolfia tetraphylla* is more in root extract as compared to stem and leaves *Rauvolfia tetraphylla* plant contain chemical constituents of pharmacological significance.

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