

ORIGINAL RESEARCH



## PRELIMINARY PHYTOCHEMICAL SCREENING OF FRUITS OF *XEROMPHIS SPINOSA* (THUNB.) KEAY

<sup>1</sup>Rothe S. P., <sup>2</sup>Thorat S. M., <sup>2</sup>Maheshwari A. A. and D. A. Dhale\*<sup>3</sup>

<sup>1</sup>Department of Botany, Shri Shivaji College of Arts, Commerce and Science, Akola.

<sup>2</sup>Department of Chemistry, Shri Shivaji College of Arts, Commerce and Science, Akola.

<sup>3</sup>PG-Department of Botany, SSVPS's, L.K.Dr.P.R.Ghogrey Science College, Dhule-424005.  
(Maharashtra) India

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### ABSTRACT

The aim of the present work is to study the Pharmacognostic and Phytochemical properties of fruits of *Xeromphis spinosa* (Thung.) Keay. The goal of the present study includes of collection, identification and phytochemical evaluation of fruits of *X. spinosa*. The preliminary phytochemical test on alcoholic and water extracts indicates the presence of alkaloids, glycosides, flavanoids, saponins, carbohydrates, phenols, lignins and terpenoids.

**KEYWORDS:** Phytochemical, flavanoids, saponins, glycosides, lignins.

Corresponding author: D. A. Dhale  
Email address: [datta.dhale@yahoo.com](mailto:datta.dhale@yahoo.com)

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**INTRODUCTION**

*Xeromphis spinosa* (Thunb.) Keay is a synonym of *Catunaregam spinosa* (Thunb.) Tirveng. *X. spinosa* is a shrub belonging to family Rubiaceae found in the hilly regions of Patur Taluka of Akola District (M.S.) and nearby foot hills, is characterized by the following characters. Armed shrubs/small trees with strong straight, nearly opposite decussate spines, coming off from above the branchlets. Bark: dark brown or black, rough. Branches: rigid, horizontal, many of the lateral ones suppressed and very short. Leaves: usually fascicled, stipules ovate, acuminate; petioles densely pubescent; lamina cuneate at base, elliptic to obovate, veins 6-10 pairs, apex obtuse. Flowers: fragrant, solitary or 2 (rarely 3) together, at the ends of short leaf-bearing branchlets; peduncles short; Calyx – tube broadly campanulate, teeth 5, ovate-oblong, sub-acute, often small intermediate teeth between; Corolla - white, turning yellowish, lobes nearly as broad as long, obovate-oblong, apex obtuse, reflexed. Fruits: globose or broadly ovoid, smooth or obscurely longitudinally ribbed, crowned with large calyx-limb and glabrous. Seeds: many, flat, embedded in pulp. Flowers and fruits appears during March to June.

The plant parts like stem bark and fruits are known to have medicinal significance in the traditional herbal medicine. Stem bark made into a paste and mixed with goat's milk and country liquor is prescribed in rheumatism once daily on an empty stomach. Fruits are used to cure abscess ulcers, inflammations tumours, skin diseases, pain in muscles, piles, chronic bronchitis, paralysis, leprosy, boils and eruption, brain diseases, asthma, leucoderma and rheumatism. Also pulp of fruit bark is used against bone ache during fever. The fruits of the plant have alexiteric, aphrodisiac, emetic, carminative, antipyretic, purgative and anodyne properties. Pulp of fruit bark is anthelmintic and abortifacient.

The medicinal properties displayed by the plant are due to its chemical constituents. The chemicals present in the bark are mannitol and saponins. Hydrolysis of saponins yielded randialic acid B, from a mixture of aglycones, glucose, xylose and rhamnose. Six saponins are - dumetoronins A, B, C, D, E and F - isolated, all of them contained oleanolic acid as aglycone.

**MATERIALS AND METHODS:**

The plant fruits were collected from the hilly regions Patur forest of Akola district during mar-Apr and herbarium sheets were prepared. The plant was identified from the standard floras<sup>1,2,3</sup>. The fruits were shade dried in cool and dry place; on complete drying the fruits were crushed into fine powder with the help of mixer grinder and the tests for various phytochemicals were performed on the ethanolic and water extracts by standard techniques<sup>4,5,6</sup>.

1. Alkaloids: The 0.25 g of each extracts was diluted to 5 mL of 2 N HCl. Aqueous layer formed was decanted and then it was added with one or a few drops of Mayer's reagent. Formation of precipitate or turbidity formed indicates the presence of alkaloids.
2. Carbohydrates: Molisch's test: The extract was treated with Molisch reagent and concentrated sulphuric acid was added from the sides of the test tube to form a layer. A reddish violet ring shows the presence of carbohydrates.
3. Cardiac Glycosides: To the 2 mL of test solution, 2 mL of glacial acetic acid added with one drop of ferric chloride and 1 mL of concentrated H<sub>2</sub>SO<sub>4</sub>. Mix well and the formation of brown greenish ring indicates the presence of glycosides.
4. Flavonoids: When aqueous basic lead acetate was added to test sample produces reddish brown precipitate.
5. Lignin: Labat test: When gallic acid is added to the test sample, it results in the formation of olive green colour.
6. Reducing sugars: To the 2 mL of the test solution, 2 mL of fehling's solution and 3 mL of distilled water was added and boiled for 2 min. The formation of reddish orange color indicates the presence of reducing sugars.
7. Phenolics: Few drop of 5% ferric chloride solution was added to the test solutions. Formation of intense blue color indicates the presence of phenols.
8. Proteins and Amino acids: The 1% ninhydrin was added to the 2 mL of the test solution.

Formation of blue or violet color indicates the presence of amino acids.

9. Saponins: The 2 mL of each test solution was added with H<sub>2</sub>O and shook. Formation of foamy lather indicates the presence of saponins.

10. Steroids: Salkowski test: Few drops of concentrated sulphuric acid were added to the test samples in chloroform, a red colour appears at the lower layer indicates the presence of sterols.

11. Tannins: A 2 mL of each test solution was added with distilled H<sub>2</sub>O and a pinch of lead acetate, formation of white precipitate indicates the presence of tannins.

12. Terpenoids: The 2 mL of test solution was added with 2 mL of chloroform and a 3 mL of conc. H<sub>2</sub>SO<sub>4</sub> mixed well and the formation of reddish brown indicates the presence of terpenoids.

## OBSERVATIONS:

**Table1: Phytochemical Screening of fruit of *Xeromphis spinosa* (Thunb.)Keay**

S.N	Constituents	Chemical Tests	Extracts	
			Ethanol	Dist. Water
1	Alkaloids	Mayer's Reagent	++	++
2	Carbohydrates	Molish's Test	++	++
3	Cardiac Glycosides	Keller-Killiani Reagent	+	---
4	Flavonoids	Lead Acetate	+++	+++
5	Lignins	Labat Test	++	++
6	Reducing Sugars	Fehling's Reagent	+++	+
7	Phenolics	FeCl <sub>3</sub> Sol.	---	---
8	Proteins & Amino Acids	Ninhydrin Test	---	---
9	Saponin	Foam Test	++	++
10	Steroids	Salkowski Reagent	+++	+++
11	Tannin	Lead Acetate	---	+
12	Terpenoids	CHCl <sub>3</sub> + H <sub>2</sub> SO <sub>4</sub>	++	++

## RESULTS AND DISCUSSION:

Phytochemical screening of *Xeromphis spinosa* (Thunb.) Keay fruits showed the presence of alkaloids, carbohydrates, cardiac glycosides, flavonoids, lignins, saponins, steroids and terpenoids. Phenolics and Proteins were not recorded in any extract. Comparatively good results

were observed in distilled water extracts. Alkaloids and saponins having anti-inflammatory property are present in the fruits<sup>7</sup>. The observations from the present study need to be validated with pharmacological studies in order to confirm their effectiveness.

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