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Preliminary phytochemical investigations and medicinal properties of *Tamarix ericoides* Rottl

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Abstract

The present work is an outcome of an attempt to study preliminary phytochemical constituents of *Tamarix ericoides* Rottl, a medicinal plant belongs to family Tamaricaceae and reported in the flora of Buldana district. Preliminary phytochemical study reveals the presence of alkaloids, glycosides, phytosterols, saponins, tannins etc. The plant is known for its medicinal properties and used for diabetes, paralysis, antidermatosis, stem powder with honey is taken for stomach disorder while decoction of root is given in painful urination.

Keywords: *Tamarix ericoides* Rottl, Phytoconstituents, Medicinal properties.

1. Introduction

Plant kingdom represents a rich house of organic compounds, many of which have been used for medicinal purposes. Medicinal plants have been used in virtually in all cultures as a source of medicine since times immemorial^[1-3]. Plants used for traditional medicine contain a wide range of substances that are used to treat chronic as well as infectious diseases^[4, 5]. The work presented here is an attempt to study preliminary phyto-constituents of *Tamarix ericoides* Rottl and its medicinal properties.



Photograph of a Flowering twig of *Tamarix ericoides* Rottl

Tamarix ericoides Rottl is reported in flora of Buldana district (Maharashtra). It is a tall, perennial shrub and generally occurs in sandy river beds. Bark is blackish and leaves are minute having reduced scaly lance like leaves, 0.1 – 0.4 cm long. Plant show pink flowers in the mid of December – February, having 5-sepals, 5-petals.



Photograph of *Tamarix ericoides* Rottl

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The shrub belongs to:

Family	- Tamaricaceae
Botanical Name	- <i>Tamarix ericoides</i> Rottl
Vernacular Name	- Sherni
Locality	- Sandy River beds of Rohinkhed River, Tahsil – Motala, District – Buldhana (Maharashtra)
Flowers and fruits	- December – February.

The plant generally used by local peoples and tribal as ethno-medicine on various ailments.

It is seen that not much research work is carried out on phytochemistry on *Tamarix ericoides* Rottl from the Buldhana district of Maharashtra. Some work is reported by Bhadange and Jadhao on phytoconstituents and antimicrobial activities of this species from Akola region ^[6-7].

2. Experimental

2.1 Material and methods

The plant material shoots and twigs were collected from Rohinkhed River, Tahsil Motala of Buldhana District (Maharashtra). The plant material was identified through local herbal practitioner, taxonomists of Botany department of our college and with the help of flora of Buldhana district ^[8-9]. The collected plant material was cleaned and dried in shade in the laboratory of P.G. Department of Chemistry, Jijamata Mahavidyalaya, Buldhana (M.S.) India.

2.2 Extraction

The dried plant material was grounded in to powder. The air dried powder was extracted in Soxhlet extraction apparatus successively first with petroleum ether. The extract obtained in the solvent was concentrated by distilling of solvent and then evaporated to dryness on water bath at 50 °C. Dried residue was extracted successively with benzene, chloroform, acetone ethanol and water. Before extracting with other solvent the residue powder was dried in hot air oven below 50 °C.

2.3 Phytochemical Tests

Following phytochemical tests were performed to find the phyto-constituents from plants extract using methods reported in literature ^[10-11].

2.3.1 Detection of Alkaloids

Small portions of solvent free alcoholic and water extract were transferred in three test tubes and was stirred with few drops of dil. HCl and filtered. The filtrate was tested carefully for alkaloids.

- a) **Mayer's Test:** Test solution with Mayer's reagent (Potassium Mercuric iodide) gives cream coloured precipitate.

- b) **Hager's Test:** The acidic solution with Hager's reagent (Saturated Picric acid solution) gives yellow precipitate.
- c) **Dragendorff's Test:** The acidic solution with Dragendorff's reagent (Potassium Bismuth Iodide) gives reddish brown precipitate.
- d) **Wagner's Test:** Few drops of Wagner's reagent (Iodine + potassium Iodide diluted in water) to the test filtrate at the side of test tube gives reddish brown precipitate.

2.3.2 Detection of Glycosides

A small quantity of extract on hydrolysed with dil. HCl was used for test of glycosides.

- a) **Bromine water Test:** Test solution dissolved in bromine water gives yellow precipitate.
- b) The test solution treated with Sodium Picrate gives yellow orange colour.
- c) **Legal's Test:** Test solution when treated with Pyridine (made alkaline by adding Sodium nitropruside solution) gives the red colour.

2.3.3 Detection of Phytosterols

The petroleum ether, acetone and alcoholic extracts were treated separately with solution of potassium hydroxide 1% till complete saponification takes place. Mixture of 5ml treated extract, 5 ml distilled water and 5 ml ether was well shaken & evaporated to half quantity by volume which was further tested for phytosterols.

- a) **Lieberman-Burchard's Test:** The test solution treated with few drops of acetic anhydride and mixed with con. Sulphuric acid was added from the side of test tube, it showed a brown ring at the junction of the two layers. The upper layer turns green.
- b) **Sulphur Test:** Sulphur when was added in to the test solution, it sinks in it.

2.3.4 Detection of Saponins

Foam Test: To 1 gm alcoholic and aqueous extract, 1 ml of distilled water was added with constant shaking form the foam, which was stable for 15 minutes.

2.3.5 Detection of Tannins

To small quantity of alcoholic and aqueous extract addition of 5% Ferric chloride solution gave green colour indicated presence of Tannins.

3. Results and Discussion

The phytochemical screening of shoots and twigs of *Tamarix ericoides* Rottl showed the presence of alkaloids, glycosides, phytosterols, saponins and tannins. The phytochemical constituents of *Tamarix ericoides* Rottl in extracting solvents are tabulated in table no. 1.

Table 1: Phytochemical constituents of *Tamarix ericoides* Rottl (Stem bark) (Low +, medium ++, high +++, absent -)

Test	Reagent	Extracting Solvent					
		Petroleum Ether	Benzene	Chloroform	Acetone	Ethanol	Water
Alkaloids	Mayer's Reagent	-	-	++	-	-	++
	Hager's Reagent	++	-	++	+++	-	++
	Dragendorff's Reagent	++	+	++	-	+	-
	Wagner's test	+	++	+	-	-	+++
Glycosides	Bromine water	-	+	++	-	-	+++
	Sodium Picrate	-	+	++	-	-	+++
	Legal's test	-	+	++	-	-	+++
Phytosterols	Liebermann- Burchard's Test	+++	++	++	-	-	++
	Sulphur test	+++	++	+	-	-	+
Saponins	Foam test	-	++	++	+	-	+
Tannins	Ferric chloride solution test	-	-	-	+++	+++	+++

Phytochemical analysis of ethno-medicinal is essential in order to detect bioactive substances, their natural distribution and biological function.

Alkaloids found in *Tamarix ericoides* Rottl shrub have important medicinal properties such analgesic (codenine), nerve stimulants (strychnine), local anaesthetic (cocaine), cardiac depressants (quinine) and anti-leukemic (vincristine).

Glycosides are useful in medicines as analgesic, antirhumatic action. Tannins are used as mild antiseptic in treatment of various ailments like stomach and purgative. Phytosterol act as painkiller and hence this plant is used by tribal people for abdominal and stomach pain. Saponins consist of triterpenoid, steroid or steroidal glycoalkaloids with one or more sugar chains.

Tamarix ericoides Rottl has significant value in ethno medicine but it is not still used in health care system as plant is wild and its occurrence is restricted to particular area.

4. Conclusion

The preliminary phytochemical analysis of *Tamarix ericoides* Rottl showed the presence of alkaloids, glycosides, tannins, saponins and phytosterols. That plant has various medicinal uses and can be used in diabetes, paralysis, anti-dermatosis, stomach disorder, painful urination. There is need to have more research on the plant from medicinal applications point of view.

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