

## Research Article

# Phytochemical Evaluation of *Terminalia arjuna* *alstonia scholaris* *ixora coccinea*

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## ABSTRACT

In the present study, an attempt was made to investigate Phytochemical evaluation of *Terminalia arjuna* *Alstonia scholaris* *Ixora coccinea*. The crude drug powder extracts of the leaves of the above plants were taken for the study. The Phytochemical Screening was done for the selected plants. Phenolic compounds, tannins, flavonoids, cardiac glycosides, and alkaloids were present in *Terminalia arjuna*. Alkaloids, flavanoids, carbohydrates, glycosides and tannins were present in *Alstonia scholaris* Alkaloids, saponins, flavanoids, carbohydrates and anthraquinone glycosides were present in *Ixora coccinea*

**Keywords:** Phytochemical screening, *Terminalia Alstonia* and *Ixora* Plant species.

## INTRODUCTION

Herbal medicine also known as botanical medicine or phytomedicine-refers to using plants seeds, flowers, roots for medicinal purpose. Herbalism has a long tradition of use of outside of conventional medicine. It is becoming more main stream as improvements in analysis and quality control along with advances in clinical research show the value of herbal medicine in the treating and preventing disease. The medicinal action of plants is unique to a particular plant species, consistent with the concept that the combination of secondary metabolites in a particular plant is taxonomically distinct for three medicinal plants and their description and uses respectively. Here in the present study three plants were taken for Phytochemical screening and plants extracts crude dried powdered drug were taken and evaluated. The phytochemical constituents were studied by qualitative analysis for performing various chemical tests.

## EXPERIMENTAL

### Plant Materials

The leaves of plants *Terminalia*, *Alstonia* and *Ixora* species were authenticated by Prof. V.Satyanarayana Department of Plant

Breeding, Bapatla Agricultural College, Bapatla, Andhra Pradesh, India .They were collected from different areas of Guntur, Prakasham and Krishna districts of Andhra Pradesh, India .

### Solvent Extraction

The leaves of *Terminalia*, *Alstonia* and *Ixora* were collected, washed, dried and powdered separately. 50g of dried powder of the leaves was weighed and transferred into a conical flask and it was macerated with sufficient amount of ethanol for about a week days. Process is repeated with water. The whole mixture was filtered and filtrate was collected, concentrated in a china dish on a hot plate till the residue was obtained. The extracts was collected, labeled and stored for further experimental use.

### Qualitative analysis for detection of Carbohydrates Alkaloids Cardiac Anthraquinone Saponin Glycosides Flavonoids Tannins

The extracts and crude dried powders of *Terminalia arjuna* *Alstonia scholaris* *Ixora coccinea* were subjected to qualitative analysis for presence of chemical constituents .

**TEST FOR CARBOHYDRATES**

TEST	PROCEDURE
<b>MOLISCH'S TEST</b>	200 mg of extracts were dissolved separately in 5ml of water and filtered. 2 ml of the above sample solution is placed in a test tube. Two drops of the Molisch reagent is added. The solution is then poured slowly into a tube containing 2 ml of concentrated sulphuric acid and observed.
<b>FEHLING'S TEST</b>	1ml of Fehling's solution A and 1ml of Fehling's solution B were added to 100mg of extracts separately. They were heated on a boiling water bath for 5 min and observed.
<b>BENEDICT'S TEST</b>	To the 150 mg of each extracts, 2ml of Barfoed's reagent was added. Then the mixture was heated on a boiling water bath for 5 min, cooled and observed.

**TEST FOR ALKALOIDS**

To 250 mg of each extracts, 10 ml of dilute HCl was added, mixed and filtered. To the

filtrate the following reagents were added and tested.

TEST	PROCEDURE
<b>WAGNER'S TEST</b>	2 ml of Wagner's reagent was added to the above filtrate solution and observed.
<b>HAGER'S TEST</b>	To the 2 ml of above filtrate solution, 2 ml of picric acid was added and observed.

**TEST FOR GLYCOSIDES**

The extract was tested for the presence of

- Saponin glycosides

- Cardiac glycosides
- Anthraquinone glycosides

**TEST FOR SAPONIN GLYCOSIDES**

TEST	PROCEDURE
<b>FOAM TEST</b>	To 200 mg of each extracts, 15 ml of distilled water was added, shake it well and observed.

**TEST FOR CARDIAC GLYCOSIDES**

TEST	PROCEDURE
<b>LEGAL'S TEST</b>	To 50 mg of each extracts, 1 ml of pyridine, 1 ml of Sodium nitro prusside solution were added and observed.
<b>KELLER-KILIANI TEST</b>	To 50 mg of each extracts, 2 ml of glacial acetic acid, 1 ml FeCl <sub>3</sub> solution were added, heated and then cooled. This was transferred to a test tube containing 2ml conc. H <sub>2</sub> SO <sub>4</sub> and observed.

**TEST FOR ANTHRAQUINONE GLYCOSIDES**

TEST	PROCEDURE
<b>BORNTRAGER'S TEST</b>	To 200 mg of each extracts, dil. H <sub>2</sub> SO <sub>4</sub> was added and boiled. Then it was filtered and cooled. To the cold filtrate, 3 ml of benzene was added and mixed. The benzene layer was separated and to it, ammonia (2 ml) was added and ammonical layer was observed.

**TEST FOR FLAVANOIDS**

TEST	PROCEDURE
LEAD ACETATE TEST	To the 100 mg of each extracts, lead acetate (5 ml) was added and observed.

**TEST FOR TANNINS**

To 100 mg of each extracts, the following reagents were added and observed.

- a) 5 ml of 5% w/v FeCl<sub>3</sub> solution.
- b) 5 ml acetic acid solution.
- c) 5 ml dil. KMnO<sub>4</sub> solution.

**TEST FOR STEROIDS**

TEST	PROCEDURE
SALKOWSKI TEST	To 100 mg of each extracts, 2 ml of CHCl <sub>3</sub> , 2 ml of conc. H <sub>2</sub> SO <sub>4</sub> were added, mixed thoroughly and both the layers were observed for color.
LIBERMAN AND BURCHARD TEST	To 200 mg of each extracts, 5ml CHCl <sub>3</sub> , 5 ml acetic anhydride were added. Two drops of H <sub>2</sub> SO <sub>4</sub> was added from the sides of test tube and observed.

**Table 1: Phytochemical Evaluation of *Terminalia arjuna***

S.NO.	CHEMICAL TESTS	RESULT
1	<b>TEST FOR CARBOHYDRATES</b> A. Molisch's test B. Fehling's test C. Benedict's test D. Barfoed's test	Positive Positive Positive Positive
2	<b>TEST FOR ALKALOIDS</b> A. Hager's test B. Wagner's test	Positive Positive
3	<b>TEST FOR FLAVANOIDS</b> Lead acetate test	Positive
4	<b>TEST FOR SAPONINS</b> A. Foam test	Negative
5	<b>TEST FOR STEROIDS</b> A. Lieberman burchard test B. Salkowski test	Negative Negative
6	<b>TEST FOR CARDIAC GLYCOSIDES</b> A. Legal test B. Keller-killiani test	Positive Positive
7	<b>TEST FOR ANTHRAQUINONE GLYCOSIDES</b> A. Borntrager's test	Negative

**Table 2: Phytochemical Evaluation of *Alstonia scholaris***

S.NO.	CHEMICAL TESTS	RESULT
1	<b>TEST FOR CARBOHYDRATES</b> A. Molisch's test B. Fehling's test C. Benedict's test D. Barfoed's test	Positive Positive Positive Positive
2	<b>TEST FOR ALKALOIDS</b> A. Hager's test B. Wagner's test	Positive
3	<b>TEST FOR FLAVANOIDS</b> Lead acetate test	Positive
4	<b>TEST FOR SAPONINS</b> Foam test	Negative
5	<b>TEST FOR STEROIDS</b> A. Lieberman burchard test B. Salkowski test	Positive Positive
6	<b>TEST FOR CARDIAC GLYCOSIDES</b> A. Legal test B. Keller-killiani test	Positive Positive
7	<b>TEST FOR ANTHRAQUINONE GLYCOSIDES</b> Borntragers test	Positive
8	<b>TEST FOR TANNINS</b> A. FeCl <sub>3</sub> test B. Acetic acid test C. KMnO <sub>4</sub> test	Positive Positive Positive

**Table 3: Phytochemical Evaluation of *Ixora coccinea***

S.NO.	CHEMICAL TESTS	RESULT
1.	<b>TEST FOR CARBOHYDRATES</b> A. Molisch's test B. Fehling's test C. Benedict's test D. Barfoed's test	Positive Positive Positive Positive
2.	<b>TEST FOR ALKALOIDS</b> A. Hager's test B. Wagner's test	Positive
3.	<b>TEST FOR FLAVANOIDS</b> Lead acetate test	Positive
4.	<b>TEST FOR SAPONINS</b> A. Foam test	Positive
5.	<b>TEST FOR STEROIDS</b> A. Lieberman burchard test B. Salkowski test	Negative Negative
6.	<b>TEST FOR CARDIAC GLYCOSIDES</b> A. Legal test B. Keller-killiani test	Negative Negative
7.	<b>TEST FOR ANTHRAQUINONE GLYCOSIDES</b> A. Borntrager's test	Positive

## RESULTS AND DISCUSSION

The study of the chemical constituents and the active principles of the medicinal plants have acquired a lot of importance all over the world. The present study includes the phytochemical screening of the plants *Terminalia arjuna*, *Alstonia scholaris*, *Ixora coccinea*. The plants were collected and were authenticated. Then they were shade dried and powdered and were subjected to phytochemical screening. The qualitative chemical tests for the ethanolic extracts were performed. The investigation showed that *Terminalia arjuna* contains carbohydrates, alkaloids, flavanoids, cardiac glycosides, anthraquinone glycosides, saponins, steroids and tannins. The screening showed that *Alstonia scholaris* possesses carbohydrates, flavanoids, alkaloids, steroids, cardiac glycosides and tannins. The screening showed that *Ixora coccinea* possesses carbohydrates, flavanoids, saponins, steroids and alkaloids. The results were given in Table 1 and Table 2 and Table 3 respectively.

## CONCLUSION

The screening of phytochemical constituents of plants *Terminalia arjuna*, *Alstonia scholaris*, *Ixora coccinea* indicated the presence of carbohydrates, flavonoids, alkaloids and steroids in common. The plants contain more metabolites; there is a need for further investigations using fractionated extracts and purified chemical components.

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