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Phytochemical Screening of Folklore Medicine and Its Constituent Plants for Controlling Jaundice

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Abstract

The present study is focused on the use of plants species to control jaundice in Nalgonda district and providing details about the plants and their parts used as folklore medicine by the ethnic groups. Preliminary phytochemical analysis was carried out with different extract of Sample-I, II and the constituent medicinal plant parts used in folklore medicine.

Keywords: Folklore, Screening, Plant extract, Jaundice, Secondary metabolites.

Introduction

Generally the knowledge of folk medicines is transmitted from one generation to another through oral communication or traditional culture and is the outcome of bold experimentation through trial and error method over hundreds of years. The traditional healers are in a better position to deal with their day-to-day health problems and they take care of the common ailments of the human in their home setting^[1]. Folk medicines may have been generated from the contribution of a particular ethnic group or from a specific locality or may have coevolved with age-old culture. Worldwide, folk medicine practices are widespread especially on the traditional societies^[2].

Materials and Methods

All information was collected and identified based on interview and field studies with local healers of Nalgonda district. Such medicines have been shown to have significant healing power for

Jaundice. The fresh leaves, root, stem, seed etc. were collected from forest fields of tribal areas of devarakonda, chandampeta, Pedda adicharlapally, Dindhi, Nampally, Chinthapally, Gurrampode, Marriguda mandals of Nalgonda district. Fresh parts of the plants were identified and authenticated prior to phytochemical analysis. The plant parts were separately cut into small bits, and air dried in shade for two weeks. They were ground to powder and sieved before being subjected to phytochemical screening. The present study aims to analyze the phytochemical components present in plants which are used in folk medicine samples that were found to possess potential of curing jaundice. Preliminary qualitative phytochemical screening was carried out following standard protocols^[3-9].

Test for alkaloids To 5ml of extract 5ml of 2n HCl is added and boiled and then the mixture is filtered. To the filtrate a few drops of Mayer's reagent is added. A color precipitate indicated the presence of alkaloids.

Test for anthroquinones 5ml extract was boiled with 10 ml of sulphuric acid and filtered while hot. The filtrate was shaken with 5ml of chloroform and chloroform layer was pipetted out in to another test tube then 1ml of dilute ammonia is added. The change in colour indicates the presence of anthroquinones.

Test for amino acids. 1ml of the extract was treated with few drops of ninhydrin reagent. Appearance of purple colour indicates the presence of amino acids.

Test for cardiac glycosides. To 1ml extract, glacial acetic acid, few drops of ferric chloride and then finally concentrated sulphuric acid were added from the walls of the test tube. Appearance of the reddish brown at the junction of two layers and the bluish green colour in the upper layer indicates the presence of cardiac glycosides.

Test for flavonoids To 1ml of the extract, a few drops of dilute sodium hydroxide were added. An intense yellow colour was produced in the plant extract, which became colorless on addition of few drops of dilute acid. This indicates the presence of flavonoids.

Test for monosaccharides. To the 1ml of extract, 1ml of Barfoed's reagent was added and heated on water bath formation of brown precipitate indicates the presence of monosaccharides.

Test for steroids. For testing the presence of steroids 1ml extract was dissolved in 10ml of chloroform and equal volume of concentrated sulphuric acid was added from the walls of the test tubes. Appearance of red colour in the upper layer and yellow with green fluorescence indicates the presence of steroids.

Test for tannins. Tannins are tested by adding a few drops of 1% lead acetate to 5ml of plant extract Appearance of yellow precipitate indicates the presence of tannins.

Test for terpenoids. 1ml of the extract was dissolved in 1 ml of chloroform; 1ml of acetic anhydride was added following the addition of 2ml of concentrated sulphuric acid formation of reddish colour indicates the presence of terpenoids.

Test for saponins. Saponins are tested by boiling 5ml of extract in 10ml of distilled water in a test tube and are shaken vigorously for about 30 seconds. The test tube is allowed to settle for half an hour formation of froth indicates the presence of saponins.

Test for phenols. Phenols are tested by adding 2ml of ferric chloride solution to 2ml of plant extract. Appearance of bluish green color solution indicates the presence of phenols.

Test for reducing sugars. 1ml of extract was added to 5 to 10 drops of Fehling's solution (reagent). Mixture was then subjected to boiling for 15 minutes. Appearance of brick red precipitate indicates the presence of reducing sugars.

Results

Jaundice Sample-I

Folk medicine for jaundice sample-I analysis for phytochemicals showed the presence of alkaloids only in chloroform extract when compared to other extracts. Alkaloids are also found in the methanol extract of *Tinospora cordifolia* leaf extract, in the distilled water extract of *Hemicyclia porteria* dry fruit powder which are the component parts of the sample-I.

Anthroquinones are present in all the extracts of Sample-I. These are also found in most of the extracts of *Tinospora cordifolia* leaf and *Hemicyclia porteria* dry fruit powder except in distilled water and petroleum ether.

Cardiac glycosides are found in petroleum ether, ethyl alcohol and in chloroform extracts in sample-I. These are absent in all extracts of *Tinospora cordifolia* leaf powder and present only in the ethyl acetate extracts of *Hemicyclia porteria* dry fruit powder.

Flavonoids are present only in distilled water and in petroleum ether extract of Sample. These are absent in all extracts of *Tinospora cordifolia* leaf powder and present in methanol, distilled water, ethyl alcohol extract of *Hemicyclia porteria* dry fruit powder.

Steroids are absent in all extracts of the sample-I, *Tinospora cordifolia* leaf powder and *Hemicyclia porteria* dry fruit powder. Tannins are present in distilled water, methanol and ethyl alcohol extract of Sample-I. These are present in the chloroform, ethyl alcohol and methanol extract of *Tinospora cordifolia* leaf extract and in *Hemicyclia porteria* dry fruit powder.

Terpenoids are present only in ethyl alcohol and ethyl acetate of jaundice sample-I. These are present in ethyl acetate and moderately present in the distilled water, chloroform, methanol extracts of *Tinospora cordifolia* leaf powder. These are

also present in chloroform, methanol, ethyl acetate and moderately present in ethyl alcohol extract of *Hemicyclia porteria* dry fruit powder.

Saponins are absent in all extracts of the sample-I. These are also present in methanol and ethyl alcohol and distilled water extracts of *Tinospora cordifolia* leaf powder and *Hemicyclia porteria* dry fruit powder.

Phenols are present only in ethyl alcohol and ethyl acetate of jaundice sample-I, these are absent in all the extracts *Tinospora cordifolia* leaf powder and present only in the ethyl acetate extract of *Hemicyclia porteria* dry fruit powder.

Phytochemical Screening of Different Compounds from Folklore Medicine for Jaundice Sample-I

S.No	PHYTOCHEMICAL CONSTITUENTS	Distilled Water	Petroleum Ether	Chloroform	Methanol	Ethyl Alcohol	Ethyl Acetate
1.	Alkaloids	-	-	+	-	-	-
2.	Anthro quinones	+	+	+	+	+	+
3.	Cardiac Glycosides	-	+	++	-	+	-
4.	Flavonoids	++	+	-	-	-	-
5.	Steroids	-	-	-	-	-	-
6.	Tannins	++	-	-	+	+	-
7.	Terpenoids	-	-	-	-	+	+
8.	Saponins	-	-	-	-	-	-
9.	Phenols	-	-	-	-	-	-

- = indicates absence of phytochemicals.

+ = indicates presence of phytochemicals and

++ = shows moderate concentration.

Constituent Plants

Phytochemical Screening of *Tinospora cordifolia* Leaf Extract from Various Solvents

S.No	PHYTOCHEMICAL CONSTITUENTS	Distilled Water	Petroleum Ether	Chloroform	Methanol	Ethyl Alcohol	Ethyl Acetate
1.	Alkaloids	-	-	-	++	-	-
2.	Anthro quinones	-	-	++	+	++	+
3.	Cardiac Glycosides	-	-	-	-	-	-
4.	Flavonoids	-	-	-	-	-	-
5.	Steroids	-	-	-	-	-	-
6.	Tannins	-	-	+	++	+	-
7.	Terpenoids	++	-	++	++	-	+
8.	Saponins	++	-	-	+	+	-
9.	Phenols	-	-	-	-	-	-

- = indicates absence of phytochemicals.

+ = indicates presence of phytochemicals and

++ = shows moderate concentration.

Phytochemical Screening of *Hemicyclia porteria* Dry Fruit Extract from Various Solvents

S.No	PHYTOCHEMICAL CONSTITUENTS	Distilled Water	Petroleum Ether	Chloroform	Methanol	Ethyl Alcohol	Ethyl Acetate
1.	Alkaloids	++	-	-	-	-	-
2.	Anthro quinones	-	-	++	++	+	+
3.	Cardiac Glycosides	-	-	-	-	-	++
4.	Flavonoids	++	-	-	+	++	-
5.	Steroids	-	-	-	-	-	-
6.	Tannins	-	-	++	+	+	-
7.	Terpenoids	-	-	+	+	++	+
8.	Saponins	+	-	-	+	+	-
9.	Phenols	-	-	-	-	-	+

- = indicates absence of phytochemicals.

+ = indicates presence of phytochemicals and

++ = shows moderate concentration.

Jaundice Sample-II

Folk medicine for jaundice sample-II analysis for phytochemicals showed the presence of alkaloids only in chloroform extract. Alkaloids are also found in the distilled water extract of *Abrus precatorious* root and chloroform extract of *Abrus precatorious* leaf powder and are absent in all extracts of *Luecus aspera* leaf powder which are the component parts.

Anthroquinones are present in all the different extracts of sample-II. These are also present in distilled water, chloroform, methanol, ethyl acetate extracts of *Abrus precatorious* root, leaf powder and in similar extracts of *Luecus aspera* leaf powder.

Cardiac glycosides are found in extracts of methanol, ethyl alcohol in the sample-II. These are also present in distilled water and ethyl alcohol extracts of *Abrus precatorious* root powder and distilled water, petroleum ether extracts of *Abrus precatorious* leaf powder and only present in petroleum ether extract of *Luecus aspera* leaf powder. Flavonoids are present only in petroleum ether extract of Sample-II. These are present only in distilled water extract of *Abrus*

precatorious root, *Luecus aspera* leaf powder and *Luecus aspera* leaf powder.

Steroids are absent in all extracts of the sample-II. These are present in ethyl alcohol, ethyl acetate extracts of *Abrus precatorious* root and *Abrus precatorious* leaf powder and in chloroform, ethyl acetate and methanol extract of *Luecus aspera* leaf powder. Tannins are present in methanol, ethyl alcohol extract of Sample-II, *Abrus precatorious* root, *Abrus precatorious* leaf and *Luecus aspera* leaf powder extracts.

Terpenoids are present in methanol, ethyl alcohol, ethyl acetate extracts of jaundice sample-II, in all extracts of *Abrus precatorious* root and leaf except in petroleum ether and also in extracts of *luecus aspera* leaf powder.

Saponins are absent in all extracts of the sample-II. These are present in distilled water extract of *Abrus precatorious* root, methanol, ethyl alcohol extracts of *Abrus precatorious* leaf and *Luecus aspera* leaf powders. Phenols are absent in all extracts of the sample-II, but present in few extracts of *Abrus precatorious* root and leaf and also in extracts of *Luecus aspera* leaf powders.

Phytochemical Screening of Different Compounds From Folklore Medicine For Jaundice Sample-II

S.No	PHYTOCHEMICAL CONSTITUENTS	Distilled Water	Petroleum Ether	Chloroform	Methanol	Ethyl Alcohol	Ethyl Acetate
1	Alkaloids	-	-	+	-	-	-
2	Anthro quinones	++	+	+	+	+	+
3	Cardiac Glycosides	-	-	-	+	+	-
4	Flavonoids	-	++	-	-	-	-
5	Steroids	-	-	-	-	-	-
6	Tannins	-	-	-	+	+	-
7	Terpenoids	-	-	-	+	+	+
8	Saponins	-	-	-	-	-	-
9	Phenols	-	-	-	-	-	-

- = indicates absence of phytochemicals.

+ = indicates presence of phytochemicals and

++ = shows moderate concentration.

Constituent Plants

Phytochemical Screening of *Abrus precatorious* Root Extract from Various Solvents

S.No	PHYTOCHEMICAL CONSTITUENTS	Distilled Water	Petroleum Ether	Chloroform	Methanol	Ethyl Alcohol	Ethyl Acetate
1	Alkaloids	++	-	-	-	-	-
2	Anthro quinones	+	-	++	++	-	++
3	Cardiac Glycosides	+	-	-	-	+	-
4	Flavonoids	++	-	-	-	-	-
5	Steroids	-	-	-	-	+	+
6	Tannins	-	-	-	+	+	-
7	Terpenoids	+	-	+	+	+	+
8	Saponins	++	-	-	-	-	-
9	Phenols	+	-	-	+	+	-

- = indicates absence of phytochemicals.

+ = indicates presence of phytochemicals and

++ = shows moderate concentration.

Phytochemical Screening of *Abrus precatorious* Leaf Extract from Various Solvents

S.No	PHYTOCHEMICAL CONSTITUENTS	Distilled Water	Petroleum Ether	Chloroform	Methanol	Ethyl Alcohol	Ethyl Acetate
1	Alkaloids	-	-	+	-	-	-
2	Anthro quinones	+	+	+	++	-	++
3	Cardiac Glycosides	++	++	-	-	-	-
4	Flavonoids	+	-	-	-	-	-
5	Steroids	-	-	-	+	+	++
6	Tannins	-	-	-	+	-	-
7	Terpenoids	+	-	-	+	+	+
8	Saponins	+	-	-	+	+	-
9	Phenols	-	+	-	-	+	+

- = indicates absence of phytochemicals.

+ = indicates presence of phytochemicals and

++ = shows moderate concentration.

Phytochemical Screening of *Luecus aspera* Leaf Extract from Various Solvents

S.No	PHYTOCHEMICAL CONSTITUENTS	Distilled Water	Petroleum Ether	Chloroform	Methanol	Ethyl Alcohol	Ethyl Acetate
1	Alkaloids	-	-	-	-	-	-
2	Anthro quinones	+	++	+	-	-	+
3	Cardiac Glycosides	-	++	-	-	-	-
4	Flavonoids	++	-	-	-	-	-
5	Steroids	-	-	+	++	-	+
6	Tannins	++	-	-	+	-	+
7	Terpenoids	++	+	-	+	+	-
8	Saponins	+	-	-	+	+	-
9	Phenols	-	+	-	+	-	+

- = indicates absence of phytochemicals.

+ = indicates presence of phytochemicals and

++ = shows moderate concentration.

Discussion and Conclusion

Folklore medicines are considered to be effective, less toxic and free from side effects when compared to synthetic drugs. The present comparative study between folk sample medicines and sample constituent plants revealed the presence of almost the similar kind of secondary metabolites.

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