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Research Article

PHYTOCHEMICALS ANALYSIS OF LEAF EXTRACTS OF *GLIRICIDIA SEPIUM*

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A B S T R A C T

Gliricidia sepium used for live fencing, fodder, firewood, green manure and intercropping. Gliricidia extract contains variety of bioactive compounds. Present study was aimed at a detailed investigation on secondary metabolites present in the leaf of *Gliricidia sepium.* The samples were extracted in ethanol, acetone and distilled water using Soxhlet apparatus, collected and stored at 4^0C. The extracts were evaporated and dried at 60^0C. The phytochemicals were screened following standard phytochemical investigation. Extract contained alkaloids, flavonoids, cardiac glycosides, steroids, tannins, carbohydrate and proteins. The findings of the study concluded that gliricidia leaf extracts have bioactive compounds that are used to overcome the problem of disease resistance.

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INTRODUCTION

Gliricidia is one of the major tropical fodder plant due to its nutritive values (3). Plants contain many active compounds such as alkaloids, flavonoids, cardiac glycosides, steroids, tannins, carbohydrate and proteins which are found in their specific parts such as leaves, flowers, barks, seeds, fruits, roots etc. Secondary metabolites play beneficial role in treatment of diseases (5).

Many organic constituents are widely used in the human therapy, veterinary, agriculture, scientific research etc. *Gliricidia sepium*is also known as quickstick. In the present investigation, qualitative and quantitative phytochemical analysis were carried out in three extracts of *Gliricidia sepium.*

MATERIAL AND METHODS

Fresh leaves of *Gliricidia sepium* were collected from local gardens of Satara city. The plant materials were taxonomically identified and authenticated by the Department of Botany, Yashwantrao Chavan Institute of Science, Satara. The collected leaves were washed well, shade dried and powdered by using mixer grinder. About 20gm of powdered material were extracted in Soxhlet apparatus with 200ml of each of following solvents; ethanol, acetone and distilled water. Extracts obtained concentrated and allowed to dried at 60^0C. The filtrates were used for phytochemical analysis as per the standard prescribed methods.

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Preliminary Phytochemical Screening

Test for Alkaloids

Hager's Test- Treat 2-3ml extract with few drops of Hager's reagent. Formation of yellow precipitate indicates the presence of alkaloids.

Wagner's Test- Treat 2-3ml extract with few drops of Wagner's reagent. Formation of reddish brown precipitate indicates the presence of alkaloids.

Test for Flavonoids

Pew's Test- To the 2-3 ml extract, added zinc powder in a test tube, followed by drop wise addition of concentrate HCl. Formation of purple red or cherry colour indicates the presence of flavonoids.

Shinoda Test- To the 2-3 ml extract, few fragments of magnesium metal were added in a test tube, followed by drop wise addition of concentrate HCl. Formation of magenta colour indicates the presence of flavonoids.

Tests for Glycosides

Test for Cardiac Glycosides

Baljets' Test- The test solution was treated with few drops of Sodium picrate. Formation of yellow colour indicates the presence of cardiac glycosides.

Test for Saponin glycosides

Foam Test-Vigorous shaking of test solution was done in this test. Observation of foam indicates saponin glycosides in solution.

Test for Steroids

Salkowski Test-Mix 2ml of extract with chloroform. Add 2ml concentrated H_2SO_4 and was shaken well. Chloroform layer appeared red and acid layer showed greenish yellow florescence indicated the presence of steroids.

Test for Tannins

Lead acetate Test-To the extract, lead acetate was added. Formation of white precipitate indicates the presence of tannins.

Braymer's Test- Mix 2 ml extract with 2 ml water, then add 2 to 3 drops of 5% $FeCl_3$. The solution turned Green precipitate.

Test for Phenols

Ellagic Acid Test- The test solution was treated with few drops of 5% glacial acetic acid and 5% $NaNO_2$ solution. The solution turned muddy or Niger brown precipitate.

Test for Carbohydrates

Molisch test-The solution was treated with few drops of alcoholic alpha-naphthol. Add 0.2 ml concentrated sulphuric acid slowly along the sides of test tube, purple to violet colour ring appears at junction.

Test for Proteins

The test solution was treated with 4% of NaOH solution. Then add 1% $CuSo_4$ solution, violet colour appears indicates presence of proteins.

Test for Fats and Oils

Pore test solution on slide, treat with few drops of Sudan Red III. Then wash slide with the help of 50% alcohol. Mount in glycerine, observed under microscope. During microscopic observation red oil globules appears.

RESULTS AND DISCUSSION

The preliminary phytochemical analysis of ethanolic, acetonic and aqueous extracts of leaves of *Gliricidia sepium* revealed the presence of phytochemicals in Table No.1. A considerable amount of alkaloids, flavonoids, cardiac glycosides, steroids, tannins, carbohydrate and proteins were found in ethanol and aqueous extract while in less amount of phytochemical were found in acetone leaf extract.

Table No.1 Qualitative analysis of phytochemicals in leaf extract of *G.sepium.*

Phytochemicals	Ethanolic Extract	Acetonic Extract	Aqueous Extract
Alkaloids	+++	+	++
Flavonoids	++	-	+
Glycosides	++	+	++
Steroids	++	-	+
Tannins	++	-	+++
Phenols	+++	+	++
Carbohydrates	++	+	+++
Proteins	+++	+	+++
Fat and oil	-	+	-

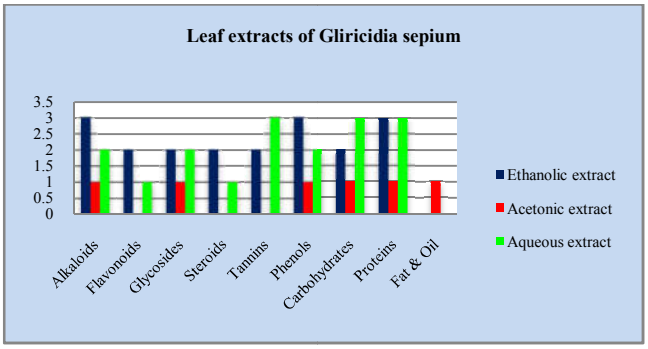

Fig 1 Graphical representation of secondary metabolites distribution in the leaf extracts of *M. oleifera*

Secondary metabolites are main medicinal constituents found in plants. The secondary metabolites which were found in leaf extracts of *Gliricidia sepium* as showed in Fig. No.1. Glycosides and Tannins were present in varying proportion in alcoholic and aqueous extract. Glycosides, flavonoids and steroids has been indicating medium positive result for ethanol and aqueous extract as compared to acetonic leaf extract.

The presence of alkaloids has been observed in ethanolic, acetonic and aqueous extract, Alkaloids, tannins, phenols, carbohydrate and protein which constitutes major part of the plant were present in all extracts. The presence of steroids has been reported in ethanolic and aqueous extract but absent in acetone extract. Fat and oil were present in only acetonic extract. The presence of flavonoids has been seen in all the extracts except acetonic leave extract.

CONCLUSION

The results revealed the presence of secondary metabolites in the plant extracts studied. Gliricidia leaf extracts have potential bioactive compounds that are used to overcome the problem of fodder.

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