

Preliminary Phytochemical Profile of Leaf Extracts in Different Solvents of *Cassia roxburghii* D.C.

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ABSTRACT

Plants are the "old buddy" of mankind. Without plants there would be no individuals on Earth. An immense degree of the world's population depends on upon the plants for their needs. *Cassia* L. is a gigantic variety of around 500 types of blooming plants in the family *Caesalpinaceae*. In the present study the products of *Cassia roxburghii* D.C. arranged by utilizing solvents like Distilled Water, Ethanol, Acetone and Chloroform are screened for the identification of nearness phytochemicals at preliminary level. *Cassia roxburghii* D.C. extract product is exceptionally rich in mixes like flavonoids, Steroids and Cardiac Glycosides and staying noteworthy mixes are additionally in the moderate sums.

1. INTRODUCTION

Plants are the "old buddy" of mankind. Without plants there would be no individuals on Earth, since we depend totally on the Oxygen made by plants in the midst of photosynthesis. Furthermore plants in like manner help mankind to keep up its prosperity by supplying phytochemicals with restorative quality through various nourishment stuffs and home developed cures [1&2]. A tremendous degree of the world's populace depends on upon ordinary remedy because of the deficiency and high costs of standard pharmaceutical [3]. The phytochemical examinations of the therapeutic plants have given some biochemical reason to their ethno pharmacological uses as a part of the treatment and neutralizing activity of various contaminations and disseminates [4]. *Cassia* L. is an enormous sort of around 500 types of blooming plants in the family *Caesalpinaceae* indicating overall dissemination [5]. The

restorative estimation of plants lies in some engineered substances or get-together of exasperates that make an unequivocal physiological action in the human body. These mixture substances are called assistant or auxiliary metabolites [6].

1.1. *Cassia roxburghii* D.C. (*C. marginata* Roxb.):

This is known as Rela, Seema rela, Seema thangedu in Telugu and it is commonly known as Red Cassia in English. It flowers throughout the year. It is generally being planted on waysides and gardens.

The habit is a deciduous tree. Branchlets are tomentose. Leaves are pinnate with sub opposite leaf lets which are wooly below and are entire and obtuse. Flowers are flame coloured and are present in axillary corymbose racemes. Each flower is having 5 ovate sepals, 5 ovate oblong petals, 10 stamens and stipitate, grooved ovary. Fruits are pods which are oblong, torulose and indehiscent. [7]

2. METHODOLOGY

Cassia roxburghii D.C is obtained from the area of Kuppam of Chittoor Dist, A.P. The gathered above said plant species of *Cassia* L. is washed completely in the running faucet water and flushed with distilled water, after the twigs of the plant species is shade dried and after that the leaves are isolated from each twig.

The shade dried leaves are pulverised and are kept in Soxhelt mechanical assembly for the extraction procedure by utilizing different solvents, for example, Distilled Water, Ethanol, Acetone and Chloroform. Soxheltation is beneficial procedure of extraction of phytochemicals as all the synthetic mixes are dissolvable in this procedure and debasements are insoluble in this procedure. This process is made for the period of considerable time period. Tests are put away till and after that subjected consecutively to the different subjective substance tests to break down the every specimen for the nearness of phytochemicals at preliminary level .

2.3. Phytochemical screening:

Different qualitative tests are carried out for each of the sample prepared in different solvents to screen various phytochemicals at preliminary level as per the standard procedures

prescribed by the Phytochemists like Harborne [8], Sofowara [9], Edeoga [10] and Trease & Evans [11]. Qualitative tests are made for the determination of phytochemical compounds such as Alkaloids, Tannins, Saponins, Phenols, Flavonoids, Carbohydrates, Proteins, Steroids, Terpenoids, Cardiac Glycosides etc.

3.3.1. Detection of Alkaloids:

Extracts were dissolved in Dil. HCl and filtered and subjected to the following tests for the identification of Alkaloids.

a. Mayer's Test: Yellow coloured precipitate formation takes place when filtrate is treated with Mayer's reagent (Potassium Mercuric Iodide) if Alkaloids are present in the sample.

b. Dangendroff's Reagent: Red coloured precipitate formation takes place when filtrate is treated with Dangendroff's reagent (Potassium Bismuth Iodide Solution) if Alkaloids are present in the sample.

3.3.2. Detection of Tannins:

Gelatin Test: Extract is added with 1% (W/V) Gelatin Solution and 10% Sodium Chloride (NaCl) Solution. Formation of White precipitate indicates the presence of Tannins

3.3.3. Detection of Saponins:

a. Froth Test: Extract is diluted with distilled Water to 20 ml and this is shaken in a graduated cylinder for 15 minutes. Formation of 1 cm layer of foam indicates the presence of Saponins.

b. Foam Test: 0.5 g of extract is shaken with 2 ml of Distilled water, if the produced foam persists for ten minutes, it indicates the presence of Saponins.

3.3.4. Detection of Flavonoids:

a. Alkaline Reagent Test: Extract is treated with few drops of Sodium hydroxide solution. Presence of Flavonoids is indicated by the formation of intense Yellow colour which becomes colourless on addition of Dilute Acid.

b. Lead Acetate Test: Extract is treated with few drops of Lead Acetate Solution. Yellow coloured precipitation indicates the presence of Flavonoids.

3.3.5. Detection of Phenols:

Ferric Chloride Solution: 3-4 drops of Ferric Chloride Solution are added to the extract and the formation of Bluish black colour indicates the presence of Phenols.

3.3.6. Detection of Cardiac Glycosides:

a. Killer Killiani Test: 0.5 g of the each extract is treated with 2 ml of Glacial acetic acid and a drop of 5%(W/V) Ferric Chloride added along with few drops of Conc. Sulphuric Acid, Greenish blue colour appears within few minutes indicates the presence of Cardiac Glycosides.

b. Bromine Water Test: Each extract is added with Bromine water, formation of Yellow coloured precipitate indicates positive test for Glycosides.

3.3.7. Detection of Steroids:

Salkowski's Test: 2 ml of extract is treated with 2 ml of Chloroform and filtered and then filtrate is treated with few drops of Conc. Sulphuric Acid, shaken and allowed to stand. Appearance of Golden Yellow colour at the interface indicates the presence of Steroids.

3.3.8. Detection of Terpenoids:

Liebermann Burchard's Test: Each of the extract is added with Chloroform and filtered. Filtrates are treated with few drops of Acetic anhydride boiled and cooled and then Conc. Sulphuric Acid is added, Red colour in the lower layer indicates the presence of Terpenoids.

3.3.9. Detection of Carbohydrates:

Extracts are dissolved individually in 5 ml Distilled water and filtered. The filtrates are used to test for the presence of Carbohydrates.

a. Molisch's Test: Filtrate is added with 2 drops of Alcoholic α - Naphthol solution in a test tube. Formation of violet ring at the junction indicates the presence of Carbohydrates.

b. Benedict's Test: Filtrate is added with Benedict's reagent and heated gently, orange red precipitate indicates the presence of Carbohydrates.

c. Fehling's Test: Filtrate is added with Dilute Hydrochloric Acid, neutralised with Alkali and heated with Fehling's A & B Solutions, formation of Red precipitate indicates the presence of Reducing Sugars.

3.3.10. Detection of Proteins:

a. Xanthoproteic Test: The extract is added with few drops of Conc. Nitric Acid , formation of Yellow colour indicates the presence of Proteins.

b. Biuret Test: Each extract is added with 5% (W/V) of Sodium Hydroxide and 1% (W/V) Copper sulphate, formation of violet coloured complex indicates the presence of Proteins in the sample.

3.3.11. Detection of Amino Acids:

To the test solution 0.25% (W/V) Ninhydrin reagent is added and boiled for few minutes, formation of Blue coloured complex indicates the presence of Amino acids.

3. RESULTS

All the samples of the selected plant species extracted in four different solvents viz, Distilled Water, Ethanol, Acetone and Chloroform are subjected to qualitative tests for the detection of various Phytochemicals and following Results are obtained in the observations. Results are described in the following tables.

Preliminary Phytochemical Screening Tests for Leaf Extracts of *Cassia roxburghii* D.C. in Distilled Water, Ethanol, Acetone and Chloroform

S. No.	Qualitative Phytochemical Screening Test	Distilled Water Extract	Ethanol Extract	Acetone Extract	Choroform Extract
1.	Alkaloids				
	Mayer's Test	-	-	-	-
	Dangendroff's Reagent:	-	-	-	-
2.	Tannins (Gelatin Test)	-	-	-	-

3.	Saponins				
	Froth Test	-	-	-	-
	Foam Test	-	-	-	-
4.	Flavonoids				
	Alkaline Reagent Test	+	+	-	-
	Lead Acetate Test	+	+	-	-
5.	Phenols (Ferric Chloride Test)	-	-	-	-
6.	Cardiac Glycosides				
	Killer Killiani Test	-	+	+	-
	Bromine Water Test	-	+	+	-
7.	Steroids (Salkowski's Test)	+	+	+	-
8.	Terpenoids (Liebermann Burchard's Test)	-	-	-	-
9.	Carbohydrates				
	Molisch's Test	++	++	++	+
	Benedict's Test	++	++	++	+
	Fehling's Test	++	++	++	+
10.	Proteins				
	Xanthoproteic Test	+	-	-	-
	Biuret Test	+	-	-	-
11.	Amino Acids	-	-	-	-

(++ Indicates Presence, + Indicates Moderate Presence, - Indicates Absence)

4. DISCUSSION

The leaf *Cassia roxburghii* D.C. extracts prepared by using solvents like Distilled Water, Ethanol, Acetone and Chloroform are showing following observations in the qualitative tests of preliminary phytochemical screening. Flavonoids are present in the first two samples i.e. the extracts prepared by using solvents like Distilled Water and ethanol. Cardiac glycosides are present in two extracts only made up from ethanol and acetone extracts and are absent in the extracts prepared in Distilled water and chloroform solvents. Steroids are present in all the first three extracts prepared in the solvents like Distilled Water, ethanol and acetone but absent in the chloroform extract. Carbohydrates are present in all the four samples but proteins are present in the first extract only and amino acids are absent in all the four samples i.e. in the extracts of Distilled Water, ethanol, acetone and chloroform. Alkaloids, tannins, saponins, phenols and terpenoids are completely absent in all the four extracts prepared by using solvents like Distilled Water, Ethanol, Acetone and Chloroform.

5. CONCLUSION

Cassia roxburghii D.C. leaf is very rich in compounds like flavonoids, Cardiac glycosides and Saponins and remaining significant compounds are also in the moderate amounts. Ethanolic extract is showing the positive tests for most of these compounds for which the qualitative tests are conducted at preliminary level and moderate compounds are showed positive results for acetone and Distilled water extracts and Chloroform extract is showing negative results for the most of the qualitative tests.

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7. REFERENCES

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