QUALITATIVE PHYTOCHEMICAL INVESTIGATION OF LEAFS OF *CASSIA TORA* LINN. PLANT IN DIFFERENT SOLVENTS

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ABSTRACTS

Cassia ToraLinn.is annual widely distributed dicotic plant and can grow up to 30 to 90 centimeters and comes under the family Fabaceae having subfamily Ceasalpinioideae.In most part of the India the leaves of plant use as vegetable during rainy season. The plants roots, leaves and stem have been used in Indian traditional medicines.Most of thephytochemicals present in plant are active against severaldiseases.The present study undertaken to estimate the presence of phytochemicals in the plant grow in the region of college campus and adjoining areas. In this study screened about nineteen phytochemicals with different solvents likeWater, Etahanolic, Methanolic, Chloroformic, Acetonic and Ethyl acetate extracts of leaves of Cassia Tora Linn. The result shows the presence of maximum number of phytochemicals in different solvents.

Keywords: *Cassia Tora Linn., Ethanolic, Methanolic, Chloroformic, Ninteen Phytochemicals.*

Introduction

Cassia Tora Linn.Plant are widely growing herbs during the rainy season and most of the people all over the India used this herbsas a vegetable during the early growth, because after the full maturity of leaf ofthe plants the vegetable gives bitter taste.*Cassia Tora* Linn.plant due to its medicinally and economically importance the phytochemicals present in it tremendously used in indian and chinese medicinal system[1].Cassia Tora is annual dicotic plant and can grow up to 30 to 90 centimeters and comes under the family Fabaceae having subfamily Ceasalpinioideae[2] the plants grows in many country like Pakistan, Afghanistan, India, Bhutan, Nepal and Shrilanka. The phytochemicals present in the *Cassia Tora* Linn. will also treat as a remedy for various disease and also work as antitumor, antiinflamatory, antioxidant, hepatoprotective, antimutagenic, antifungal, and antihelmintichypolipidemic, antibacterial, antifertility, activities.[3] besides these application in many parts of the world the seeds of this plants after roasting and dried used as a substitute of coffee.[4]The phytochemicals presents in *Cassia Tora* Linn. plants includes Emodin,antrhroquinones, norubrofusarin, rubrofusaringchrysophanol,obtusifolin, Toralactone, torachrysone,obtusin, chryso-obtusin, auranto-obtusin,and their glycosides, nathopyrones, rubrofusarin, etiobioside.[5]The world health organization in his report estimate that 80% of the people all over the world's population are using traditional medicines for maintaining their health[6].from all above literature review it reveals that the plant *Cassia Tora* Linn. is not only important from the point of view of vegetables it also show's medicinal and economically important. Hence the present study undertaken to estimate the presence of phytochemical in the plants growing in the region of college campus and adjoining areas in different solvents such asWater, Etahanolic, Methanolic, Chloroformic, Acetonic and Ethyl acetate.

Material and Methods

Collection of Plant material: The leaves of *Cassia Tora* Linn.Were collected from in the mid-month of August 2019 and around the college campus of Indira MahavidyalayaKalamb of Yavatmal district of Maharashtra state

The sample was authenticated by Dr. S.E.Mahamune, Assistant Professor, Department of Botany, GoveromentVidarbha Institute of Science and Humanities Amravati Maharashtra State

Preparation of Test extract: The fresh leaves of the plants collected were first washed thoroughly with the tap water with great force and then with distilled water. The leaves after

washing were kept for drying under the shade for few days. The dried leaves of the plant were powdered by electric grinder and coarse powder was passed through sieve no 30. The fine powder were kept in the thimble of soxhelt extractor and kept in to soxhelt assembly containing the solvents,heat the solvents up to 6 to 8 hours with gentle agitation. After heating the solvent with powder material in soxhelts extractor, the solvents evaporated at room temperature to avoid the decomposition of heat sensitive phytochemicals present in the extracts. The dried powder were weighed for calculation of percentage yield and then subjected for various phytochemical screening.

Table No 1:- Percentage Yield of leaves of *Cassia Tora* Linn.

Sr. No.	Solvents	Yield in gm	%Yield
1	Water	0.046	2.3
2	Ethyl Alcohol	0.206	10.3
3	Acetone	0.029	1.45
4	Chloroform	0.018	0.9
5	Ethyl Acetate	0.042	2.1
6	Methanol	0.204	10.2
7	n-Hexane	0.019	0.95

Phytochemical Screening

Phytochemical test were carried out by adopting standard procedure[7-9]described by Trease et.al 1983, Kokate et.al 1997, Hegde et.al 2010.

Phytochemical test

Steroid: 1ml extract was dissolved in 10 ml of chloroform & equal volume of concentrated H_2SO_4 acid was added from the side of test tube .The upper layer turns red and H_2SO_4 layer showed yellow with green fluorescence .This indicates the presence of steroid.

Tannin: 4ml extract was treated with 4 ml $FeCl_3$ formation of green colour indicates that presence of condensed tannin.

Saponin: 5 ml extract was mixed with 20 ml of distilled water then agitated in graduated cylinder For 15 min. formation of foam indicates Saponin.

Anthocyanin: 2 ml of aqueous extract is added to 2 ml of 2N HCl& NH_3, the appearance of pink red turns blue violet indicates presence of Anthocyanin.

Coumarin: 3 ml of 10% NaOH was added to 2 ml of aqueous extract formation of yellow colour indicates coumarins.

Emodins: 2 ml of NH_4OH and 3 ml of benzene was added to extract appearance of red colour indicates presence of emodins.

Alkaloids: A quantity (3 ml) of concentrated extract was taken into a test tube and 1 ml of HCl was added. The mixture was heated gently for 20 min cooled and filter,the filtrate was used for following test.

1. Wagner test: 1ml of the extract was treated with Wagner's reagent; formation of brown reddish precipitate indicates presence of alkaloids.
2. Hager's test: 1ml of the extract was treated with Hager's reagent, presence of alkaloids confirmed by the yellow colored precipitate. Proteins Xanthoproteictest:To the 2 ml of extract 0.5 ml of concentrated nitric acid were added by the side of the test tube. Presence of yellow colour showed the presence of proteins and amino acids. Amino acids:Ninhydrin test: In 2 ml extract 2 ml ninhydrinreagent was added & boil for few minutes, formation of blue colour indicates the presence of amino acid. Carbohydrate:Extract were dissolved individually in 5ml of distilled water and filtered. The filtrate was used for the following test.
3. Molisch's Test: - Filtrate were treated with 2 drops of alcoholic α-naphthol solution, formation of violet ring at the junction indicates the presence of carbohydrate.
4. Iodine Test:- 2ml of extract were treated with 5 drops of Iodine solution, gives blue color indicates the positive test
5. Fehling Test: - 2ml of extract were hydrolyzed with dilute HCl and neutralized with alkali & heated with Fehling's solution A and B, formation of red ppt indicates the presence of reducing sugar.
6. Benedict's test: - Filtrate were treated with Benedict's reagent and heated gently,

orange red ppt indicates the presence of reducing sugar.

Flavonoid

1. Alkaline reagent test: -Extract was treated with 10 % NaOH solution, formation of intense yellow colour indicates presence of Flavonoid.
2. NH_4OH test: - 3 ml of extract were 10 % NH_4OH solution development of yellow fluorescence indicates positive test.
3. Mg turning test: - Extract were treated with Mg turning and add conc.HCl to this solution add 5ml of 95 % ethanol, formation of crimson red colour indicates Flavonoid.
4. Zn test: - 2 ml extract were treated with Zn dust and conc.HCl development of red colour indicates presence of Flavonoid.

Diterpenes Copper acetate test: Extract were dissolved in water and treated with 10 drops of copper acetate solution, formation of emerald green colour indicates presence of diterpenes.

PhytosterolSalkowski'stest:Extract was treated with chloroform and filtered. The filtrate was treated with few drops of concentrated H2SO4 and shakes, allow standing, appearance of golden red indicates the positive test.

Phenol Ferric Chloride test: Test extract were treated with 4 drops of Alcoholic FeCl3 solution. Formation of bluish black colour indicate the presence of Phenol

Phlobatannins: Deposition of red ppt when aqueous extract of each plant sample is boiled with 1% Aqueous HCl was taken as evidence for presence of Phlobatannins.

Leucoanthocyanin: 5 ml of isoamyl alcohol added to 5 ml of aqueous extract, upper layer appear red in colour indicates the presence of Leuanthocyanin.

Test for anthraquinone: The extracts were shaken with 10 mL of chloroform, the content of each extract was filtered and 5 mL of 10% ammonia solution was added to the filtrate, the mixture was shaken. Pink or slight red colour in the upper part of the aqueous layer indicated the presence of free anthraquinone

Cardial Glycosides Keller-KillaniTest: Plant extract treated with 2 ml glacial acetic acid containing a drop of FeCl3 .A brown colour ring indicates the presence of positive test.

Test for Chalcones:2 ml of Ammonium hydroxide when added to 0.5g Methanolic extract. Appearance of reddish color indicates the presence of chalcones.

Table No 2: Phytochemical screening of leaves of *Cassia Tora* Linn. In various solvent

S N	Phytochemicals	Water	Ethanol	Acetone	Chloroform	Ethyl Acetate	Methanol
1	Steroid	-	-	-	+	-	+
2	Tannina.Lead Acetate	-	-	-	-	-	+
	b.$FeCl_3$	+	+	-	+	-	+
3	Saponin-Foam Test	+	+	-	+	-	-
4	Anthocyanin	-	-	-	+	+	-
5	Coumarin	+	-	-	+	-	+
6	Alkaloidsa.Wagners	+	+	-	-	-	+
	b.Hager's	+	-	-	-	-	+
7	Proteins: Xanthoprotiec Test	+	+	+	-	-	-
8	Amino Acid: Ninhydrine Test	-	-	-	-	-	-
10	Carbohydrates	+	-	+	-	-	-
	a.Molosch's Test b. Benedict Test	-	-	+	-	-	-
	c.Fehling Test	-	-	-	-	-	-
	d. Iodine Test	-	-	-	-	-	-
11	Flavonoid Test	+	-	-	-	-	-
	a.Alkaline Reagent	-	-	-	+	-	+
	b. Lead Acetate	-	-	-	-	-	-

	c.NH_4OH	-	-	-	-	-	-
	d.Mg Turning	-	+	+	+	-	-
	e. Zinc Dust	-	+	+	-	-	+
12	Diterpene'stest:Copper	+	+	+	-	-	+
13	Phytosterol	-	+	-	-	-	-
14	Phenol $FeCl_3$	-	+	+	-	-	-
15	Phlobatannins	-	+	-	-	-	-
16	Leucoanthocyanin	-	+	+	+	-	-
17	Anthraquinone	-	+	-	-	-	-
18	Cardial Glycosides	+	+	-	+	-	-
19	Chalcones	-	+	+	-	-	+

Result and Discussion

It was observed from the table no. 1 the extracts are more soluble in the solvent Ethanol and then in Methanol and least soluble in n-hexane. Therefore the percentage yield in ethanol was greater than the rest of the solvents. From the table no 2 it was observed that the solvents Ethanol,methanol and chloroform gives positive test against most of the phytochemicals present in the extracts of leaves of *Cassia Tora* Linn. The solvents Ethyl acetate and acetone was given the unsatisfactory result against the screening of phytochemicals. It may be due to insolubility of ethyl acetate in the water. In present study the phytochemicals like Phytosterol, Leucoanthocyanin ,Anthraquinone, Cardial Glycosides and Chalcones gives the positive test in some of the solvents.

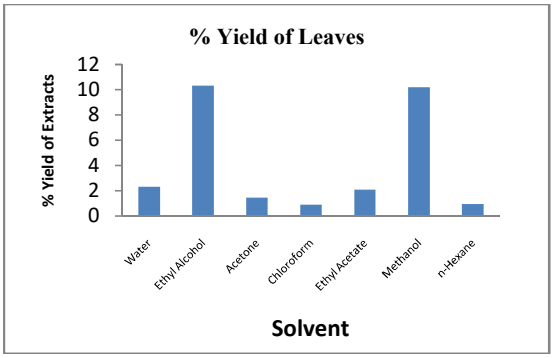

Fig.1: Showing the variation of Percentage Yield of Extracts of leaves of *Cassia Tora* Linn.

Conclusion:

Cassia Tora Linn.is not only important from the point of view of vegetables it also show's Medicinaly,Nutritionally and economically important.The plant iseasily available and widely distributed, so the phytochemicals present in it can be isolate by using a specific solvent medium.After isolation of phytochemicals in particular solvents can be applied to a particular disease. The present study gives the idea about the solubility and percentage yield of extracts that will help to researcher to select a particular solvent for isolation of a particular phytochemicals in the extracts of Cassia Tora Linn.

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