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PRELIMINARY AND QUANTITATIVE ESTIMATION OF PHYTOCHEMICALS PRESENT IN SOME FABACAE PLANTS

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ABSTRACT

Medicinal plants nurishes the human culture and their health, furthermore traditional medicine economically important and for human being it is nutritive for their health. For humans, legumes are the major source for protein. The present work uncovers kind of phytochemical present in their bark, leaves, and seeds. Further we quantified the flavonoids contain in some plants i.e. *Tamrindus indica, Pongamia pinnata*.

KEYWORDS: Preliminary test, flavonols, flavonoids.

INTRODUCTION

From the ancient time, plants have been widely used as curative agents for variety of ailments.[1] The important of herbal medicine are that about 80% of the developing world's population depends on traditional medicine for their primary health care.[2] the role of traditional medicines in the solution of health problems is invaluable on a global level.[3] Medicinal plants continue to provide valuable therapeutic agents, both in modern and in traditional medicine.[4]

Phytochemical are compounds that occur naturally in plants. They contribute to the color, flavor and smell of plants.[5] Phytochemical are several classes including alkaloids, flavonoids, coumarins, glycosides, gums, polysaccharides, phenols, tannins, terpenes and terpenoids.[6] Phytochemical can act as agents to prevent undesirable side effects of the main active principle.[7] The capacity of flavonoids to act as antioxidant depends upon their molecular structure.[8] The position of hydroxyl groups and other features in the chemical structure of flavonoids are important for their antioxidant and free radical scavenging activities.[9]

The fabacae or Leguminosae commonly known as the legume, pea of bean family, are a large and economically important family of flowering plants, Perennials or annulas.[10]

Pongamia pinnata is a medium sized evergreen tree with a spreading crown bale and a shot bale. The Pongamia seeds contain alkaloids, glabress and tannin. It has been used as a folk medicinal plant.[11]

Tamarind or Tamarinds indica L. of the Fabacae, subfamily Caesalpinioideae, is an important food in the tropics. It is a multipurpose tree of which almost every part finds at least some use nutritional or medicinal.[12] Due to diversity reported by previous works are intended to screen the preliminary phytochemical present in these plant and wish evaluate the flavonoids and flavonols. [13]

MATERIAL AND METHOD

Chemical

Methanol (HPLC grade), Water (HPLC grade) Sodium acetate, Querectien, Molish reagent, Wagner reagent, Lead acetate solution, aluminum chloride etc.

Sample collection of plant material

The plant parts (leaves, bark and seed) of *Pongamia Pinnata* and *Tamrindus indica* were collected in February 2017 from the near of Ram Darbar Chitrakoot Satna (M.P.) and identified. All the plant parts (leave, bark and seed) were collected, first washed with fresh water and then washed with methanol and dried under shade room temperature separately. The leaves, bark and seed were grinded coarsely and then powdered. Filtered through 120 no sieve and take an air tight container for further use.

Preparation of plant extract

20gm powdered sample extracted with 100 ml HPLC grade methanol through open air reflux at 40 ^{0}C for 6 hour. The extract thought filter paper (what man no-1) to remove free extractable substance. The filter of plant extract were evaporated at room temperature up to dryness and preserved at 4-5 ^{0}C for further process.

Determination of flavonoids content

Total flavonoids in the plant extract, in brief 50ul of sample followed by 50ul of $AlCl_3$. $6H_2O$ in ethanol and 25ul sodium acetate solution added.[14] The absorbance at 430nm was taken (biotek multi mode micro plate reader biotek instruments, inc Winooski, VT,USA) after 2.5h

of incubation at 20 ^{0}C. Total flavonoids content were calculated with respect to the standard curve of the flavonoids Querectien dehydrate (y=0.481x-0.450; R^2=0.933) result were expressed as microgram of Querectien (QE) per ml of the extract.

Determination of flavonols content

Total flavonoids content in the plant extract in brief 100 ul of sample (100times diluted) the original sample with methanol followed by 100ul 2% $AlCl_3.6H_2O$ in (50g/l) solution were added.[15] The absorbance at 420nm monitored biotek instrument, instrument inc Winooski, VT, USA) after 2.5h incubate at 20 ^{0}C. Total flavonoids content was calculated with respect to the standard curve of the flavonoids Querectien dehydrated quantification was performed with respect to the standard curve of Querectien (y=0.037x-0.331; R^2=0.911) result were expressed in micrograms of Querectien dehydrated equivalent (QE) per ml of the extract.

Phytochemical qualitative analysis

Different phytochemical were present in the plant and screened for preliminary tests to be qualitative analyzed standard method. The methanol and aqueous extract were prepared.

RESULT AND DISCUSSION

Preliminary and quantitative phytochemical screening

Phytochemical screening of *Pongamia pinnata* and *Tamrindus indica* (plant parts) extract showed positive test constituents like alkaloids, carbohydrate, flavonoids, phenols, protein, and tannin.(table-1).

Flavonols and flavonoids content were evaluated by aluminum chloride and querectien as a standard. Flavonid act as secondary antioxidant defense system in plant tissue exposed to different biotic and abiotic stress. Total flavonid content of selected medicinal plants were shown in table-2, standards curve of querectien for estimation of total flavonols were shown in graph-1. In the present study we have estimated Karanj leaf, bark, seed, and Imali leaf, bark, seed, it contains the 2.40%, 2.18%, 2.4% and 2.22%, 2.20%, 2.42% flavonoid content respectively.

Total flavonols content of selected medicinal plants were shown in table-3 and graphical representations of slandered curve of querectien for estimation of total flavonols were shown in graph-2. In the present study we have estimated that the flavonols content was found to

7.22% in bark, 7.13% in seed of *Tamrindus indica* and 7.14% in bark, 7.65% in seed of *Pongamia pinnata*.

Zahid Iqbal et al estimate that the aqueous methanol extract of bark (3.44g CE/100g DW) showed the highest levels of total flavonoids followed by leaves (0.61 g CE/100g DW) and seeds (0.21 g CE/100g DW).

Yusha'u et al shows that alkaloids glycosides, reducing sugar, tannin and saponins are present in ethanolic and aqueous extract of stem bark, but flavonoids is absent in both ethanol and aqueous extract. All these phytochemical are absent in chloroform extract.

Table 1: Phytochemical screening of *Tamarind indica* and *Pongamia pinnata*.

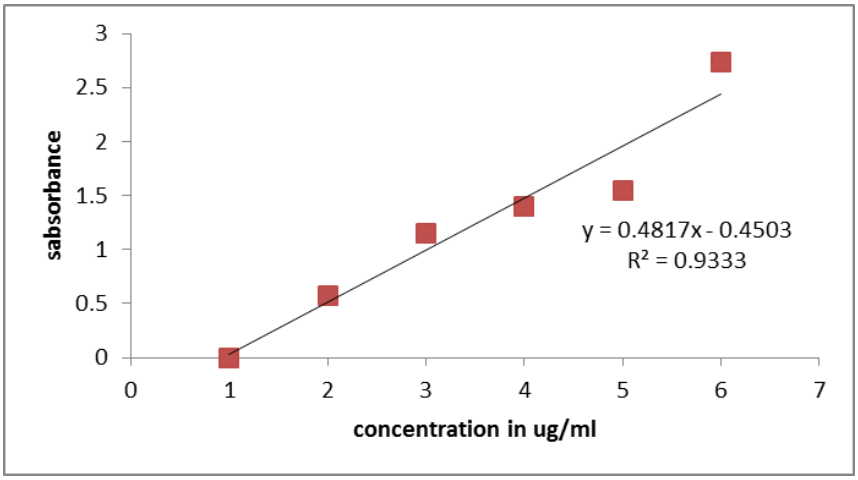
Phytochemical	Test	Leave		Seeds		Bark		Stem	
		P.P	T.I.	P.P	T.I	P.P.	T.I	P.P.	T.I.
Carbohydrate	Molish test	+	_	+	+	+	+	+	_
	Benedict test	+	_	+	+	+	+	+	+
Alkaloids	Wagnor test	+	_	+	_	+	+	_	_
Saponins	Foam test	+	_	_	_	_	+	+	_
	Na_2HCO_3	+	+	+	_	+	+	+	_
Tanin	Lead acetate test	+	+	+	+	_	+	_	+
Flavonoids test	Shinoda test	+	+	+		+	+	+	+

Table 2: Total flavonoids content in selected medicinal plants.

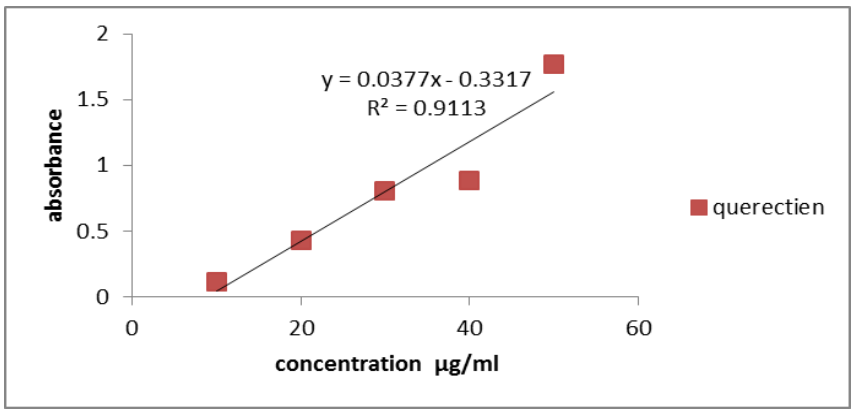
S.No.	Plant Name	Botanical Name	Total Flavonoids
1.	Karanj leave	*Pongamia pinnata*	2.40%
2.	Karanj bark	*Pongamia pinnata*	2.18%
3.	Karanj seed	*Pongamia pinnata*	2.4%
4.	Imali leave	*Tarmindus indica*	2.22%
5.	Imali bark	*Tarmindus indica*	2.20%
6.	Imali seed	*Tarmindus indica*	2.42%

Table 3: Total flavonols content in selected medicinal plants.

S.No.	Plant Name	Botanical Name	Total Flavonols
1	Karanj leave	*Pongamia pinnata*	6.19%
2	Karanj bark	*Pongamia pinnata*	7.14%
3	Karanj seed	*Pongamia pinnata*	7.65%
4	Imali leave	*Tarmindus indica*	7.83%
5	Imali bark	*Tarmindus indica*	7.22%
6	Imali seed	*Tarmindus indica*	7.13%



Graph-1: Standard graph of querectien for flavonoids.



Graph-2: Standard graph of querectien for flavonols.

CONCLUSION

In the present investigation *Tamrindus indica* and *Pongamia pinnata* has contain preliminary phytochemical constituents like alkaloids, saponins, flavonoids and flavonols. The overall result obtained by the present study we observe that total flavonoids content was highest in Imali seed and lowest in Karanj seed. Highest flavonols content was found in Imali leaf while lowest in Karanj leaves.

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