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Preliminary phytochemical and biochemical analysis of *Thespesia populnea*, Cav.

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Abstract
Plants have been used for various medicinal purpose. Ancient people utilized the great diversity of plants. They are source of food, clothing, shelter and medicine. The medicinal use of plants seems to be developed through trial and error method. Many drugs listed as conventional medications were originally derived from plants. Globally, there has been an unparalleled growth in the plant derived medicinal formulations, drugs and healthcare products. The present study of phytochemical, Biochemical and physicochemical analysis of Thespesia polpulnea aims to reveal the presence of various chemical constituents, amound of protein, starch, carbohydrate and nutritional value of the plant.

Keywords: phytochemical, biochemical, physicochemical, *Thespesia populnea*

Introduction
Herbs has a variety of chemical substances that act upon body valued for its medicinal and aromatic qualities. Herbal preparation are made from different part of herbs or plants. They come from different formulations with variable dosage including tablets, capsule, powder, extract, tincture and cream (Manjulatha, 2006) [7]. Herbal products are suitable for treating a wide range of infections and diseases. The medicinal plants that provide people with medicine to treat illness, maintain and promote health. Herbs are plants which are used in a number of ways including cooking, religious, rituals and medicines. There are some herbal products which can be use both food and drugs (Peter *et al*., 2000) [8]. It has curative properties due to presence of various complex chemical substances of different composition, which are found as secondary plant metabolites in one or more parts of these plants. These plant metabolites according to their composition are grouped as alkaloids, glycosides, corticosteroids, essential oils etc. Biochemical analysis gives the quantity of the chemical constituents. In physicochemical analysis ash test reveals the mineral component and moisture test gives the shelf life of plant (Adama Denou *et al*., 2016) [1].

Material and Methods
Study Area – (Fig-1)
In present study plants are collected from Payyanur (Fig -1). It is a Thaluk and city in Kannur district in the state of Kerala in India. Payyanur located at 12.1˚N 75.2˚E. They contain 29˚C temperature and 72% humidity.

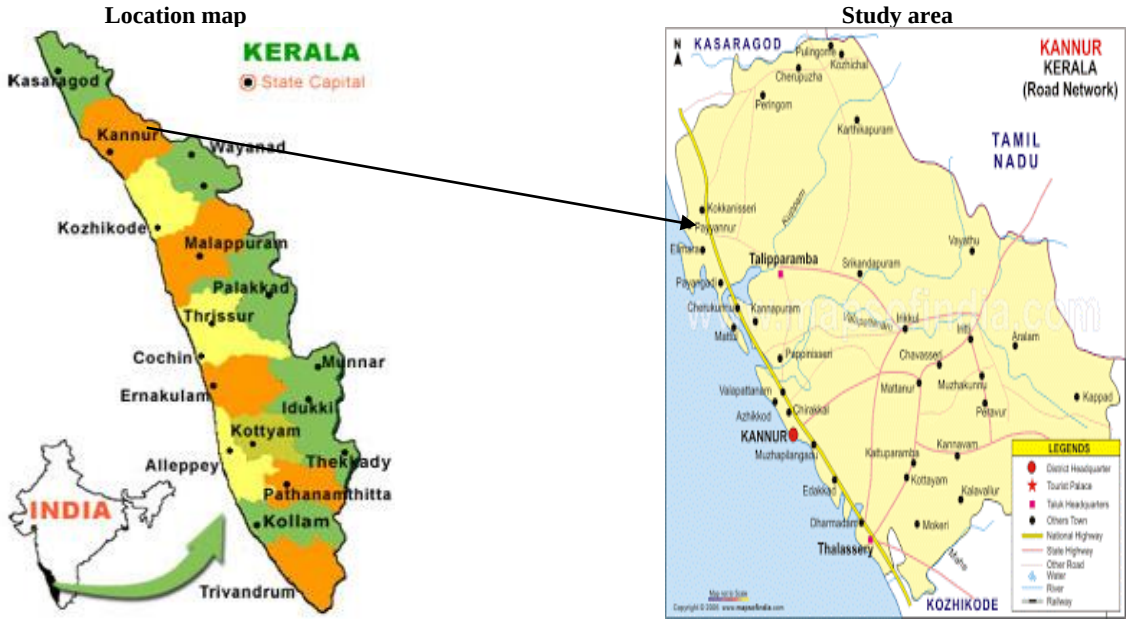

Fig 1

Systematic Position

Kingdom	:	Plantae
Order	:	Malvales
Family	:	Malvaceae
Genus	:	Thespesia
Species	:	*Thespesia populnea*, Cav.;

The potria tree reaches a height of 6-10m (20-33ft) tall and trunk diameter 20-30cm (Friday, 2006). It grows at an elevation from sea level to 275m (902ft) in areas that receive 500-1600mm of annual rainfall. It is easily recognized by its large yellow flower with purple centre, it has heart shaped leaves. Flowers are bisexual, axillary, solitary, yellow, bell shaped, 5 to 7.5 cm in Iength with five overlapping broad and rounded petals. Fruits is five celled globose capsules. Seeds about 1 cm long, ovoid (Francis, 2003) [2].

Useful Part: flower, leaves, bark and root.

Fig 2: Habit of *Thespesia populnea*

Pharmacological Activity

Anti-inflammatory, antibacterial, antifungal, anti-diabetic, anti-oxidant and wound healing activities

Sample Collection

Fresh leaves of the selected plant materials were collected during May (Fig-3). They were shade dried (Fig-4) and ground to fine powder and stored in air tight container for further analysis.

Fig 3: Fresh leaves

Fig 4: Dried sample

Preparation of the extract

The powdered leaves were collected and 15g of it were measured and introduced in to 100ml of methanol, chloroform and hexane extraction is carried out by shaker system for 48hrs. The yield of the extract were noted. The extracts were stored in a refrigerator at 4˚C for further studied.

Preliminary phytochemical analysis

The extracts of the selected plant leaf were tested for carbohydrates, proteins, starch, aminoacids, steroids, glycosides, flavonoids, alkaloids, tannins, saponins, terpenoids and gum. This phytochemical screening of the extracts are carried out by standard methods. (Raaman, 2006; Karpagam *et al*., 2008: Kokate *et al*., 2000) [9, 5].

Biochemical Analysis

The biochemical analysis of Carbohydrate and Starch were analysed by Anthrone method (Hedge, J.E. and Hofreiter, B.T 1962). Protein estimation were analyzed by Lowry's method (Lowry, *et al*., 1951).

Results

Table 1: Phytochemical constituents present in *Thespesia populnea*.

Phytochemicals	Methanol	Chloroform	Hexane
Carbohydrate	+	+	+
Protein	+	+	+
Starch	+	+	+
Amino acid	-	+	+
Flavonoids	+	+	+
Alkaloids	-	-	+
Tannin	+	+	-
Saponines	+	-	-
Terpenoids	+	+	+
Steroids	+	+	+
Glycosides	+	+	+
Gum	-	-	-

Table 2: Physicochemical composition of *Thespesia populnea* leaf.

Parameters Analysed	Sample (%)
Moisture	6.5%
Ash	12.5%

Table 3: The contents of total carbohydrate, protein in *Thespesia populnea.*

S. No	Biochemical constituents	Sample mg/g
1	Carbohydrate	28.25
2	Protein	4.96
3	Starch	25.43

Composition of carbohydrate, protein and starch in *Thespesia populnea* (Fig 5)

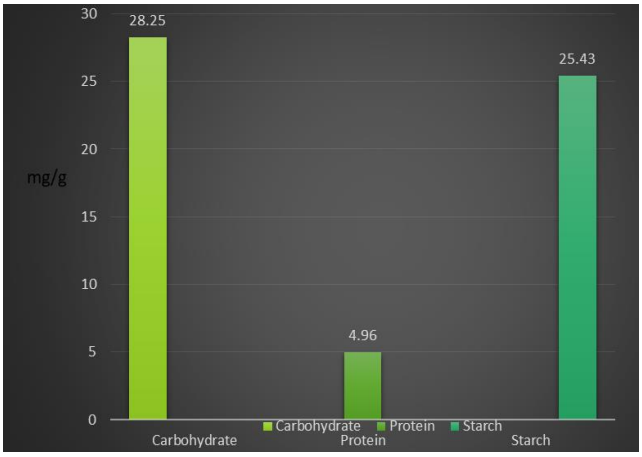

Fig 5

Discussion

The present investigation was carried to find out the phytochemical and biochemical constituents present in *Thespesia populnea*. In the present study hexane extract of *T. populnea* leaf possess carbohydrate, protein, flavonoids, alkaloids, terpenoids, steroids and glycosides. Similar result were reported in N. Savitramma *et al*. (2011).

The result shows methanolic extract of plant material *T. populnea* leaf contain flavonoids, tannin, saponines, terpenoids and steroids. Jayapriya. S, Dr. G. Bagyalakshmi (2016) [4] reports the tannin and terpenoids are absent in this plant.

Carbohydrate, flavonoids, tannin, saponines, terpenoids and glycosides were analysed in the methanolic extract of T. populnea leaf. Similar result were also been reported by S. Haja Sherief *et al.* (2011). But protein absent in his findings.

Conclusion

In general *Thespesia populnea* has many health benefits. Its fruit extract is used as a dye, seeds contain oil and all plant part are used to prepare traditional medicine. *Thespesia populnea* show high nutritional value. Leaves are eaten raw or fried in butter. Leaf and bark decoctions are taken for high blood pressure. Leaf tea is taken for rheumatism and urinary retention. The leaves of this tree are made into a paste and applied as a bandage over inflammations. Paste of flowers is applied over skin diseases. The decoction prepared by the roots is a good tonic for the body. The bark decoction is used as a cleanse for wounds. It aids in faster healing.

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