Research Article

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Pharmacognostical, phytochemical and standardisation of peltophorumpterocarpum (DC.) K.Heyne

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ABSTRACT

Leaf, flower and seed coat extract of *Peltophorumpterocarpum*(DC.) K.Heyne. family CAESAL PINIACEAE has stomatitis, insomnia, skin problems, constipation, ring warm and it is known to be a good sleep inducer and its bark is used as medicine for dysentery. The pharmacognostical, phytochemical studies revels the characters in the coarsely powdered leaves, flowers and seed coat of *Peltophorumpterocarpum* (DC.) K.Heyne. The biochemical parameters indicates the presence of tannins, steroids, triterpinoids, coumarins and fixed oils .standardization studies ash value and extractive value shows the present of specific, soluble and insoluble salts.

Keywords: *Peltophorumpterocarpum,* Ash value, Extractive value, Methonalic extract, Phytochemical studies.

INTRODUCTION

Peltophorumpterocarpum (DC.)K.Heyne.is one the Indian road avenue trees, grow up to 25 Meter tall, and belongs to CAESAL PINIACEAE family. It is commonly called copper pod of yellow flame tree. It is very attractive tree with its spreading crown of many branches consisting of feathery and gives wonderful sight when the copper-red seedpods cover the tree in profusion. The plant is Native to tropical south eastern Asia and northern Australasia, in Sri Lanka, Thailand, Vietnam, Indonesia, Malaysia, Papua New Guinea, Philippines and the island of the coast of Northern Territory, Australia. The plant is also found in different region of India including west Bengal. The leaves are long, bipinnate with16-20 Pinnae, each having 20-40 oval leaflets 8-25 mm long and 4-10 mm broad. It bears large compound racemes up to 20 cm long, bright yellow flowers, which produces a 10 cm long, & 2.5 -4 cm diameter, rusty copper color pods [1].The fruit is a pod 5-10 cm long and 2.5 cm broad, red at first, ripening black, and containing one to four seeds. Trees begin to flower after about four years. The wood of the plant is wide variety of uses, including cabinet-making and the foliage is used as a fodder crop.

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Different parts of this tree are used to treat many diseases like stomatitis, Insomnia, skin troubles, constipation, ringwormandits flower extract is known to be a good sleep inducer and used in insomnia treatment. Its bark is used as medicine for dysentery, as eye lotion, embrocation for pains and sores. The traditional healers use the leaves in the form of decocition for treating skin disorders. Stem infusion of *Peltophorumpterocarpum* (DC.) K.Heyne. used in dysentery, for gargles, tooth powder and Muscularpain. Flower are used as an astringent to cure or relieve intestinal disorders. After pain at childbirth, sprains, bruises and swelling or as a lotion for eye troubles, Muscular pains and sores [2-7]. Thus the tree is having high ornamental value and planted as avenue trees. Moreover, the leaves of the Treasure used to feed the goats and the dead branches are collected by village people to Use as fire wood. In terms of biodiversity it serves as good bees, bumble bees. Apart from these it is also having potent medicinal value. Traditionally the bark of the Tree is used to treat wounds. Malaysia using the powdered bark of this plant to treat Psoriasis [7-13].

MATERIALS AND METHODS

Collection and Authentication of plant

Leaves, flower and seed coat of *Peltophorumpterocarpum* (DC.) K.Heyne. were collected fromthenearby locality from herbal garden of Sri Ramakrishna institute of Paramedical Sciences, Coimbatore, Tamil Nadu,Jan-2018. Herbariums was prepared and deposited in SRIPMS, Pharmacognosy lab. The plant were identified and authenticated from Botanical Survey of India (TNAU), Coimbatore.

Pharmacognostical studies

A thin transverse section of the *Peltophorumpterocarpum* (DC.) K.Heyne. was taken and stained with phloroglucinol, HCL mounted and viewed under compound microscopy, the microscopy characteristics was evaluated by staining the coarsely powdered leaves, flowers and seed coat of *Peltophorumpterocarpum* (DC.) K.Heyne. with glycerol and viewed under the microscope. Organoleptic evaluation states its colour, odour and taste of the plant materials [6]

Preparation of extract

The leaves, flowers, seed, seed coat were shade dried at room temperature and coarse powdered, 500g of drugextractedwith95% methanol respectively at room temperature using maceration process for 74 hours the solution was evaporated giving residue of leaf, flower and seed coat. The total methanolic extract was stored in an air tight glass container [2].

Preliminary phytochemical studies

The phytochemical studies of the *Peltophorumpterocarpum* (DC.)K.Heyne. with the total methanolic extract of the leaves, flowers and seed coat was carried out for alkaloids, flavonoids, cardiac glycosides, carbohydrates, tannins, steroids and triterpinoids, saponins, coumarins and fixed oils with dragendroff's reagents, mayer's reagents, wagner's reagents, ethanol, sulphuric acid, magnesium ribbon, methanol, boric acid solutions, oxalic acid solutions, alpha naphthol solutions, Fehling's reagents, benedicts reagents, barfoeds reagents, ruthenium , ferric chloride, lead acetate, potassium permanganate, bromine water, ammonia, hydroxylamine hydrochloride, sodium picrate, sodium nitro preside, glacial acetic acid [1-3, 9-12]

Ash Value Determination

Total ash value, acid insoluble ash value, water soluble ash, sulphated ash valuegovernthe quality and purity of crude drug it contains inorganic phosphate, carbonates, silicates of sodium, potassium, magnesium, calcium.

Extractive Value Determination

Alcohol soluble extractives [12], water soluble extractive values [12] were used for the standardization of crude drug and determine the chemical constituents present in it.

RESULTS AND DISCUSSION

Collection and Authendication of Plant

Leaves and flowers of yellow flame were collected from the nearby locality and from Herbal garden Sri Ramakrishna Institute of Paramedical Sciences, Coimbatore, Tamilnadu October-2017.

Herbariums was prepared and deposited in SRIPMS, Pharmacognosy lab. The Plant were identified and authenticated as *Peltophorumpterocarpum*(DC.) K.Heyne. botanical survey of India (TNAU) Coimbatore.

Pharmacognositicalstudies

*Peltophorumpterocarpu*m (DC.)K.Heyne. is one the Indian road avenue trees, grow up to 25 meter tall, and belongs to CAESAL PINIACEAE family. The leaves are long, bipinnate with 16-20 pinnae, each having 20-40 oval leaf lets 8-25 mm long and4-10 mm broad. It bears Large compound racemes up to 20 cm long, bright yellow flowers, which produces a 10 cm Long& 2.5-4 cm diameter, rusty copper color pods [1]. *Peltophorumpterocarpum* (DC.) K.Heyne.is Commonly called copper pod or yellow flame tree. It is very attractive tree with its spreading crown of many branches consisting of feathery and gives wonderful sight when the copper-red seedpods cover the tree in profusion.

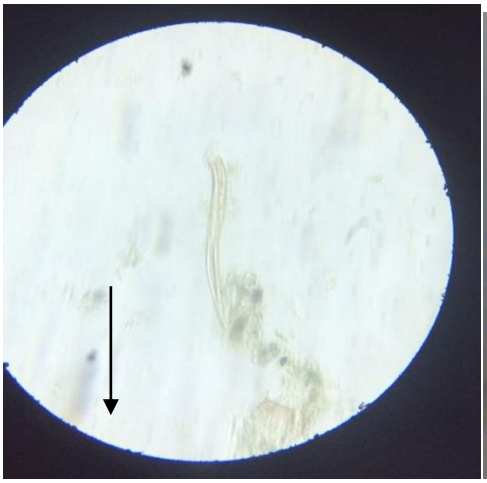
Fig: 1 Plant of *Peltophorum pterocarpum* (DC.)K.Heyne

Table :1 Taxonomic Position

Domain	Eukaryote
Kingdom	Planate
Phylum	Spermatophyte
Subphylum	Angiosperm
Class	Docotyledonae
Order	Fabales
Family	Fabaceae
Subfamily	CAESALPINIACEAE
Genus	*Peltophorum*
Species	*Peltophorumpterocarpum*

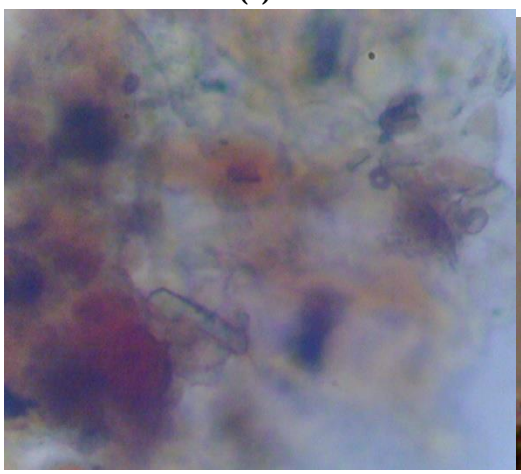
Table: 2 Vernacular names

English	Copper pod tree, yellow flame, golden flamboyant
French	Jacaranda
German	Gelberflammenbaum
Hindi	Peelagulmohar
Kannada	Kempukenjiga,nirangi,vatanarayana
Marathi	Sanchaila,sankasura
Sanskrit	Siddesvara
Tamil	Konvaivakai
Telugu	Konda cinta



(a)

(b)



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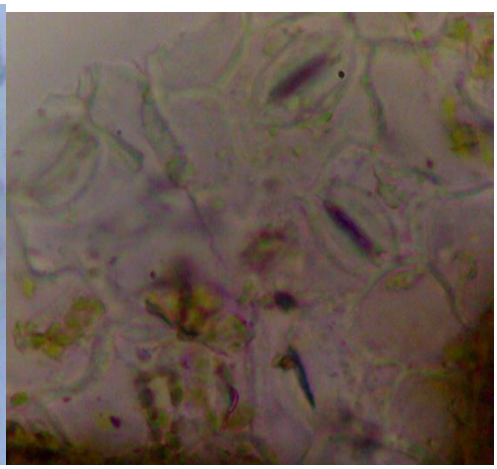

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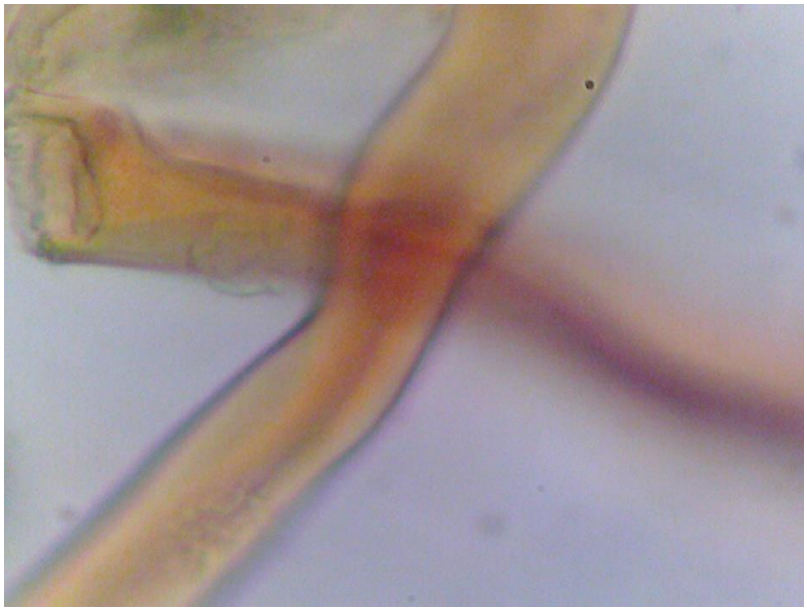

(e)

.Fig: 4 Microscopic Characteristics

(a) Trichomes,(b)epidermis, (c) calcium oxalatecrystals, (d) stomata, (e)pericyclic fibers

Table 3: Organoleptic Evalution

Characters	Leaf	Flower	Seed coat
Colour	Green	Yellow	Brownish black
Odour	Characteristics	Characteristics	none
Taste	Slightly bitter	Slightly bitter	blunt

Preparation of extract

The *Peltophorumpterocarpum* (DC.) K.Heyne. extract was evaporated giving dark greenish residue of leaf, Dark brownish residue of flower and black residue of seed coat. The total methanolic extract was found to be 34g of leaves, 26g of flower and 13g of seed coat was obtained and stored in an air tight container.

Preliminary phytochemical studies

Preliminary phytochemical analysis indicates the presence of alkaloids, flavonoids, glycosides, carbohydrate, tannins, saponin, fixed oil the results are tabulated.

Table 4: Preliminary phytochemical studies

Test	Leaf	Flowers	Seed coat
Alkaloids	_	_	_
Dragon raff's reagent			
Mayer's reagent	_	_	_
Wagner's reagent	_	_	_
Hagers reagent	_	_	_
Tannic acid	_	_	_
Flavonoids	_	_	_
Shinoda test			
Alkaline reagent test	_	_	_
Zinc Hydrochloride test	_	_	_
Fluorescence test	_	_	_

Test	Leaf	Flowers	Seed coat
Leucoanthocayanidine test	_	_	_
Cardiac glycosides	_	_	_
Keller-killiani test			
Bal jet's test	_	_	_
Legal test	_	_	_
Carbohydrate	_	_	_
Malischs test			
Barfoed's test	_	_	_
Fehling test	_	_	_
Test for gum	_	_	_
Test for mucilage	_	_	_
Tannins	++	+	_
Ferric chloride test			
Lead acetate test	++	++	_
Kmno4	+	+	+
Steroids and triterpinoids	+	+	_
Libermann-Burchardtest			
Salkowski test	+	+	+
Saponins	_	_	_
Froth test			
Coumarins test	+	+	+
With ammonia			
With hydroxylamineHydrochloride	+	+	+
Fixed oil	+	++	+
Spot test			

Observation

High+++;Intermediate ++;Low +;Negative -

Ash Value Determination

The standardization of the *Peltophorumpterocarpum* (DC.) K.Heyne. was carried out by ash value and extractive value.. The value are expressesd as mean ± SEM, n=3 in each group. $^{*}P<0.05$ significant as compared to control, $^{**}P<0.05$, significant as compared to control, statistical test employed is ANOVA followed by dunnett's t test.

Table:4 Ash Value Of The Leaves, Flowers and Seed coat of *Peltophorumpterocarpum*(DC.) K.Heyne.

S.no	Ash test	Leaf (%w/w)	Flower (%w/w)	Seedcoat (%w/w)
1	Total ash value	25.12±0.2	27.36±0.42	26±0.46
2	Water soluble ash value	21.67±0.51	21.39±0.36	25.5±0.39
3	Acidinsoluble ash value	7.5±0.12	3±0.05	5±0,16
4	Sulphated ash value	26.5±0.32	41.5±0.54	29±0.42

Extractive Value Determination

Table 5: Extractive Value leavesof*Peltophorumpterocarpum*(DC.)k.heyne.

S.NO	ITEM	WATER SOLUBLE VALUE (%W/W)	ALCOHOL SOLUBLE VALUE (%W/W)
1.	Leaf	16.8±0.21	14±0.32

CONCLUSION

The plant selected for thestudy identified as *Peltophorumpterocarpum* (DC.) K.Heyne.by the botanical survey of India, Tamilnadu agricultural university, Coimbatore. The studies morphology, histologicalcarried out for calibration of the drug.The leaves, flowers and seed coat contain tannins, steroids and triterpenoids, coumarins and fixed oil as the major component. The standardization of the plant, ash value and extractive values of *Peltophorumpterocarpum* (DC.) K.Heyne was performed for leaves, flower and seed coat.

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