

## PRELIMINARY PHYTOCHEMICAL SCREENING & ANTISOLAR ACTIVITY OF PONGIMIA PINNATA

Ashish Anil Katkar\* and Patil C. D.

Gourishankar Institute of Pharmaceutical Education and Research, Limb, Satara, India-41501.

\*Corresponding Author: Ashish Anil Katkar

Gourishankar Institute of Pharmaceutical Education and Research, Limb, Satara, India-41501.

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### ABSTRACT

The aim of study was to investigate photoabsorptive property of extracts of the leaves of *Pongamia pinnata*(L.) Fabaceae, in the ultraviolet region (200–400 nm). The leaves powder of plant were extracted in Soxhlet apparatus using solvent ethanol. The extracts was concentrated by evaporation of the solvent and dried to get extracts. Then, 10 mg of the extracts was dissolved in the solvent using ethanol and their absorption spectra were measured using UV–visible spectrophotometer. Different concentrations of the extracts 5, 10, 15,20 and 25 mg/100 ml was read at their respective wavelength ( $\lambda_{max}$ ) of maximum absorption. The ethanol extract were found to be most effective in the UVB region and moderately effective in the UVC region and minor effective in the UVA region. The extracts of the leaves of the Pongam Tree' under study showed exact good absorbance throughout the UVC. The *P. pinnata* extracts be used for formulation of highly effective sunscreen preparations such as cream, lotion, as it will enhance effectively contribute to the UV along with the greatest use of avoiding the adverse and toxic effects of synthetic sunscreen compounds which having absorbing properties of a conventional sunscreen. It definitely useful in broadening the UV protection ability of the sunscreen which protect our skin from various skin related disease.

**KEYWORDS:** *Pongamia pinnata*, phytochemical test, ethanoic extraction, antisolar, UV region (200–400 nm).

### INTRODUCTION

The 'Pongam Tree' is cultivated in a large number of gardens and along the countless roads in India and is becoming the most easily available trees. The therapeutic properties and importance of *Pongimia. pinnata* are very well recorded in the texts of traditional Indian medicines, Ayurveda & Siddha,. The tree is a member of the 'leguminosae' family and sub family is 'Papilionaceae'. In the Tamil, this is generally known as 'Ponga'and Pongam'. In both the languages of Hindi and Bengali, the people named it as 'Karanj' or 'Kanji'. It is called 'Karum Tree' or 'Poonga Oil Tree' in English.The leaves are around 10 cm to 25 cm in the length and each of the leaflets have short stalked. The leaf stems and the flower stems are normally puffy at the bases. It is have one of the few 'Nitrogen Fixing trees' producing seeds containing 30-50% oil. Exposure to UV radiation being the most important risk factor in development of skin cancer. The natural substances like anthraquinones, flavonoids and polyphenols have been considered as sunscreen agents because of their ultra violet radiation absorption and antioxidant activities various herbal formulations and chemicals are available to block UV rays and always prevent all types of skin from various types of damages.The importance of sunscreens and their

photoprotective strategies against these harmful rays are very important. UV rays are divided into the following regions: ultraviolet C (UVC 200–290 nm), ultraviolet B (UVB 290–320 nm), and ultraviolet A (UVA 320–400 nm). UVA is further divided into UVA II (320–340 nm) or short wave UVA, and UVA I (340–400 nm) or long-wave UVA.UVC has a major factor in causing human skin cancers but deplication of ozone layer it major problem.

However, both UVA and UVB radiation from the sunlight reach the earth in abundant quantities. The plant and its various parts have been used in many indications since earlier times but the Antisolar activity of the plant in ethanoic extract has not been reported till date. This is the basis for selection of the plant for the study of its sunscreen activity.

### MATERIALS AND METHODS

#### Collection and identification

The plant *Pongamia pinnataa* collected from the Satara district, Maharashtra, during the month of september in the year 2018 and authenticated by Dept. of Botany, Y.C.I.S, Satara, Maharashtra, India.



Fig: PONGAMIA PINNATA LINN plant.

### PHYTOCHEMICAL TESTS OF ETHANOLIC EXTRACT OF *PONGAMIA PINNATA* LINN

Table 1.1 Shows phytochemical constituent and their confirmation results.

Sr.No.	Phytochemical Constituents	Test performed	Confirmation
1	Alkaloids	a) Mayer's test b) Wagner's test c) Hagner's test	+ ve +ve +ve
2	Flavonoids	a) Shinoda test b) Lead acetate solution	+ve +ve
3	Tannins /Phenolic compounds	a) 5% FeCl <sub>3</sub> test b) Iodine test	+ve +ve
4	Amino acid	a) Ninhydrin test b) Tyrosine test	+ve +ve
5	Glycosides	a) Keller Killani test b) Borntrager test c) Legal test	+ve +ve +ve
6	Saponins	a) foam test	+ve
7	Terpenoids	a) 5% Ferric chloride b) Iodine test	+ve +ve

#### Photochemical examination

The flavonoid identification tests were performed on the extract.

**Test A:** To ethanolic extract, add 5ml of 90% ethanol, few drop of concentrated hydrochloric acid and 0.5g of magnesium turning. The pink color observed which shows that presence of Flavonoid in the extract (Shinoda test).

**Test B:** To the ethanolic extract add lead acetate solution, it shows yellow colored precipitate is formed.

#### Preparation of sample For Antisolar Activity

The sample prepared were at 10mg % w/v concentration by dissolving extract into the 100ml of distilled water and making concentration(10mg/100ml).

#### Checking of anti-solar activity

The UV absorption spectrum for extract of *Pongamia pinnata* was obtained in range of 200-400nm using Double beam UV-Visible Spectrophotometer Model Shimadzu-1700.

#### RESULT

Evaluation of ethanolic extract of *Pongamia pinnata* Linn. detect the presence of flavonoids, glycoside compounds, carbohydrate, proteins, terpenoids and, alkaloids. The UV scanning absorption spectra of the ethanolic extract showed very strong absorption at 0.464A with  $\lambda$  max at 270nm. The graph extract also showed a plateau in range of 300-400 nm with absorbance of 0.464.

#### DISCUSSION

The result obtained were showed the ability of extract to absorb UV radiation effectively and hence proved its UV protection ability. The extract showed absorbance within range at 200–240 nm, while good absorbance at a range

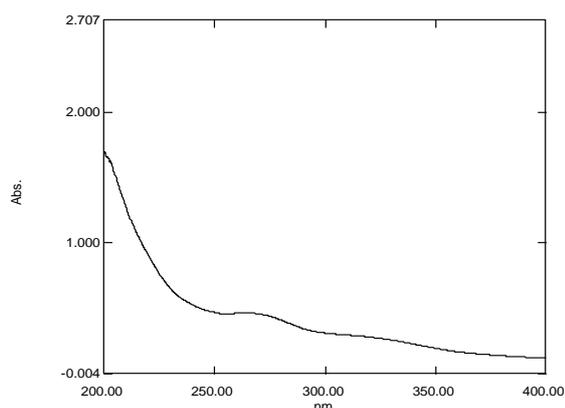


Fig 2: Wavelength.

of 240–325 nm. The moderate absorbance was n at the range of 320–400 nm. Qualitative investigation indicated the presence of flavonoids in the extract. Flavonoids are the coloured pigments mainly found in leaves and flowers amongst the natural sources. They are well known for their attractive colors and pharmacological activities. It also absorbs light and helps to protect the photosensitive substances in the flower and leaves and thus play a key role in the defense mechanism of plants. Absorption of UV radiation is a main characteristic for identification of flavonoids in natural sources. The results showed strong-to-moderate absorption of UV radiation along the whole range and this ability may be due to the presence of flavonoids.

### CONCLUSION

As ethanol extract were found to be extremely good absorbents of the UV rays in the UVB and C regions and the extract was found to be we can positively conclude that the leaves of *P. pinnata* contain such flavonoids compounds which when put together in a single herbal formulation like ointments or creams can give rise to an extremely effective sunscreen preparation showing its protective action throughout the broad ultraviolet region. It will enhance and effectively contribute to the UV absorbing properties of the sunscreen. It will also help in broadening the UV protection ability of the sunscreen formulations.

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