



## STUDY ON ANTI-SOLAR ACTIVITY OF ETHANOLIC EXTRACT OF PETALS OF PLUMERIA FRANGIPANI

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### ABSTRACT

The sunlight which stimulates melanin the pigment that acts as the skin natural sunscreen. But excessive radiations of sunrays are unprotected and leading to painful sunburn or other skin related complication. The aim of this work was to evaluate UV absorption ability of *Plumeria frangipani* in view of a possible application as maceration process and method was performed by UV visible Spectrophotometry in range of 200-400 nm for this plant. The final result of extract was reported as maximum absorbance at 326 nm while the moderate absorbance at 260-360 nm.

**KEYWORDS:** *Plumeria frangipani*, Anti-solar, Spectroscopy.

### INTRODUCTION

Exposure to UV radiation is a major risk factor to most skin cancer and sunlight is main source of UV rays. Even though UV rays make up small portion of the sun rays, they are the main cause of the suns damaging effects on the skin. UV damages the DNA of the skin's cells. Skin cancer starts when this damage affects the DNA of the gene that controls skin cell growth. There are 3 types of UV rays: UVA rays: Dimension of wavelength is 400- 320nm. These rays cause Age skin cell and can damage their DNA cells. These rays are linked to long term skin damage such as wrinkles and skin cancers. UVB rays: Dimensions of wavelength are 320-290 nm. These rays can directly damage the skin cell DNA and the main ray's cause's sunburns and can also may cause most skin cancers. UVC rays: Dimensions of wavelength are 209-200nm. These rays don't get out from atmosphere and they normally do not cause skin cancer.

Hence, both UVA and UVB rays causes skin damage, patches, premature eye damage and skin damage leads to skin cancer. The skin has an intrinsic property to protect itself from sun in the form of melanin. Exposure to UV radiations from sun and other sources such as solarism's, is a major cause of skin cancer. Short term exposure to UV rays can cause sunburn and tanning while long term exposure can cause early skin aging, wrinkles, loss of skin elasticity, dark patches, premature eye damage and skin damage leads to skin cancer. Since research has been shown UV damage from the sun is main cause of skin cancer, we need to take proactive approach in relation to sun exposure to avoid harmful skin damage. In response to this, to find various herbal formulations are available to block various ranges of UV rays and always prevent all types of skin from various damages. Our main objective is used to find such herbal component that can be used as antisolar effect. The petals of *Plumeria frangipani* have shown antisolar activity. *Plumeria frangipani* is a dicotyledonous plant belongs to family Apocynaceae.

Flowers of Yellow sage are highly colored which may be due to flavonoids and consist of large number of chromophores responsible for the anti-solar activity. Absorption of UV radiation is a main characteristic for identification of flavonoids in flowers. The results indicated that the absorption ability is may be due to the presence of polyphenolic compounds of both the flowers. This preliminary study indicated that the flowers of yellow sage can be used as an alternative to harmful synthetic formulations that are available nowadays.

In the present study we have made an attempt to congregate the botanical, Phytochemical and pharmacological information on *plumeria frangipani* petals as a medicinal flower used in the Indian system of medicine, survey of literature revealed the presence of phenolic groups and flavonoids. Researches on flavonoids have shown promising activities like hypoglycemic, gastroprotective, antiviral, antimutagenic, anti-inflammatory, antioxidant and rheumatoid arthritis. All these activities are due to presence of flavonoids Components.

## EXPERIMENTAL WORK

**1) Collection and Identification:** *Plumeria frangipani* petals were collected in Karad, Satara District, and State of Maharashtra. These specimens were identified by in the Herbarium of Department of Botany, Y. C. College Karad.

**2) Extraction:** *Plumeria frangipani* petals were freshly obtained and dried in sunlight and crushed into fine powder. The dry powdered petals (100 g) were percolated in 90 % ethanol

(1 L) by maceration with occasional shaking for two weeks and filtered. The extracts were evaporated to dryness.

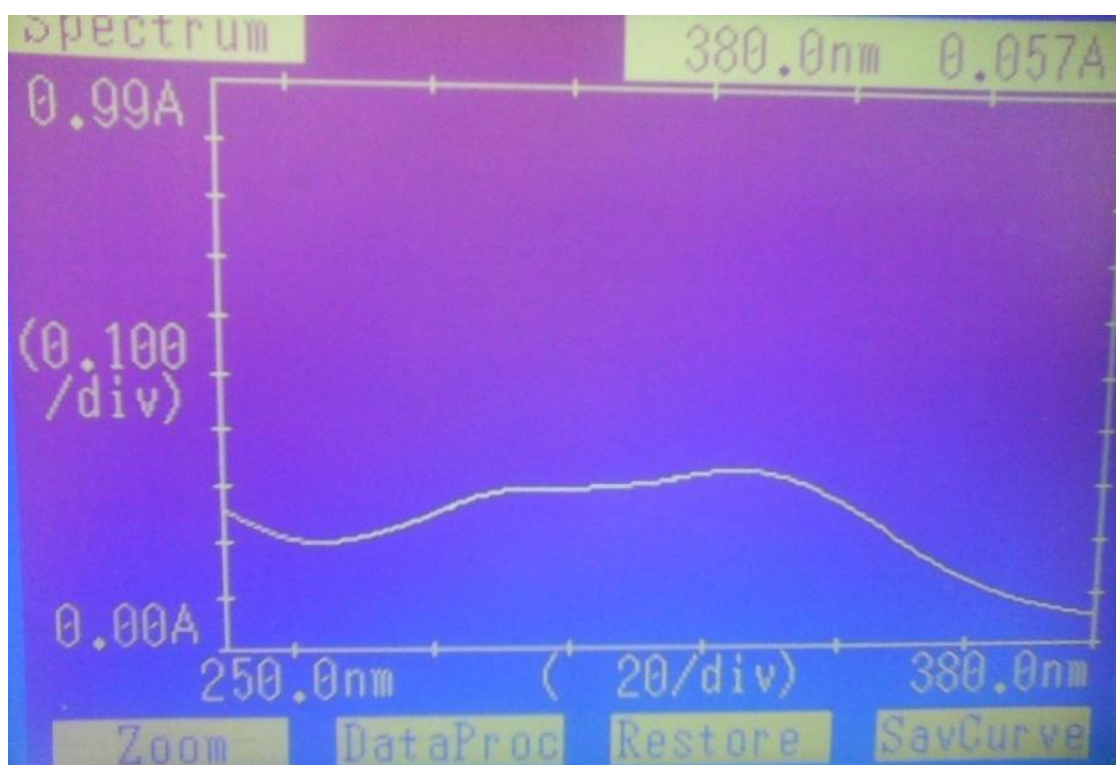
**3) Photochemical Examination:** The general flavonoid identification tests were performed on the extract.

**Test 1:** To dry extract, add 5ml of 95% ethanol, few drops of concentrated hydrochloric acid and 0.5 g of magnesium turning. The finally pink color observed. (Shinoda test)

**Test 2:** To a small quantity of extract, add lead acetate solution, it shows yellow colored precipitate is formed.

**4) Preparation of Sample:** The sample preparations were carried out by 10 mg % w/v concentration dissolving into the 100 ml of distilled water (10 mg/100ml).

**5) Evaluation of Anti-Solar Activity:** The UV absorption spectrum for extract was obtained in range of 200-400 nm using Double beam UV-Vis Spectrophotometer Model Shimadzu-1700.



Following figure indicate digital monitor display reading of absorption spectra of the extract which is directly taken from spectrophotometer.

## RESULT

The UV scanning absorption spectra of the extract showed very strong absorption at 0.330 A with  $\lambda$  max at 326 nm. The graph extract also showed a plateau in range of 300-400 nm with moderate absorbance of ~0.3-0.1.

## DISCUSSION

The result obtained were showed the ability of extract to absorb UV radiation and hence proved its UV protection ability. The extract showed absorbance at 326 nm. The moderate absorbance was noted at the range of 260-360 nm. After investigation of extract indicated the presence of flavonoid. It also absorbs light and helps to protect the photosensitive substances in the petals and thus play a key role in the defense mechanism of plants. Absorption of UV radiation is a main characteristic for identification of flavonoid 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 flavonoid.

## CONCLUSION

The flavonoids were responsible for the free radical scavenging activity were believed to be one of the important components in anti-solar activity. The present study proved activity of the plant shows utility in anti-solar formulations. This will be a better, cheaper and safe alternative to harmful chemical sunscreens that used now a day in the industry.

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