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## Study of aqueous extract of leaves of *Psidium guajava* as an anti-solar agent

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### Abstract

**Objective:** The present study aimed at the phytochemical examination and anti-solar activity of *Psidium guajava* (leaf) aqueous extract has more flavonoid content based on this chemical substance photo protective activity was evaluated using UV visible spectrophotometry, where the method is diffused transmittance and the range of UV-visible about 200-400nm.

**Methods:** The pulverized dried *Psidium guajava* leaves were extracted with distilled water using soxhlet apparatus. Aqueous extract were filtered & evaporated to dryness. The photo protective activity was evaluated by using UV visible spectrophotometry, where the method it is diffused transmittance and the range of UV-visible about 200-400nm.

**Results:** The UV scanning absorption spectra of the extract showed very strong absorption at 0.279A with-max at 268 nm.

**Conclusion:** The extract has an ability to absorb in the entire UV range.

**Keywords:** UV rays, *Psidium guajava*, aqueous extract, and anti-solar agent

### Introduction

In recent year herbs have been used in the medicines to treat different skin disease. When skin surface absorb ultraviolet radiations free radicals or reactive oxygen species are produced having adverse effect such as sunburns, wrinkles, lower immunity against infection premature aging and cancer hence protective and preventions are required from ultra violet radiation. Ultra violet radiation (UVR) exposure to skin causes skin disorder such as squamous cell aging immune depression of skin and photodermatose<sup>[1]</sup>. The UV radiations are categories in the three categories as such UV-C(200-280nm), UV-B(280-320nm), UV-A(320-400nm) from above three categories of UV radiation, UV-C radiation can cause severe biological damage to skin as compared to UV-B and UV-A radiation. But UV-C radiations are filtered by the ozone layer, so UV-B and UV-A radiation is currently the reason for causing skin cancer, so as to avoid this sunscreen agents are used which act as a protective agents against harmful UV radiations<sup>[2, 3, 7, 8]</sup>.

Medicinal plant have used in primary health care over many centuries before the advent of modern medicine *Psidium guajava* L belongs to Myrtaceae family is popularly known as 'poor man's apple of tropics, has a long history of traditional use for a wide range of ailments.<sup>[4]</sup> It is a lower evergreen tree or shrub 6 to 25feet high, with wide- spreading braches and square, downy twinges. It is a cover by roads and in waste places in Hawaii. Guava is tropical plant and semitropical plant. The extract of root, bark and leaves of guava are used as folk medicine to treat gastroenteritis, vomiting, diarrhea, dysentery, wounds, ulcer, toothache and number of other conditions. Leaves contain phenolic compounds isoflavonoids, Gallic acid, catechin, epicatechin, rutin, naringenin, karepferol having hepatoprotective, antioxidant, and anti- inflammatory, antispasmodic, anticancer, antimicrobial, analgesic action. The present study aimed to carry out the anti-solar activity of *Psidium guajava* Linn leaves prepared by aqueous extract<sup>[4-6]</sup>.



Fig 1: Whole Plant of *Psidium guajava*

**Material**

The leave *Psidium guajava* L was collected from satara, Maharashtra, washed properly and shade dried. The dried leaves powdered and used for the extraction purpose. The specimens were identified by in the department of botany Y.C. college satara.

**Extraction Method**

The pulverized dried leaves *Psidium guajava* were extracted with distilled water using soxhlet Apparatus. Water extract were filtered & evaporated to dryness.

**Photochemical Examination**

The general flavonoid identification tests were performed on the extract.

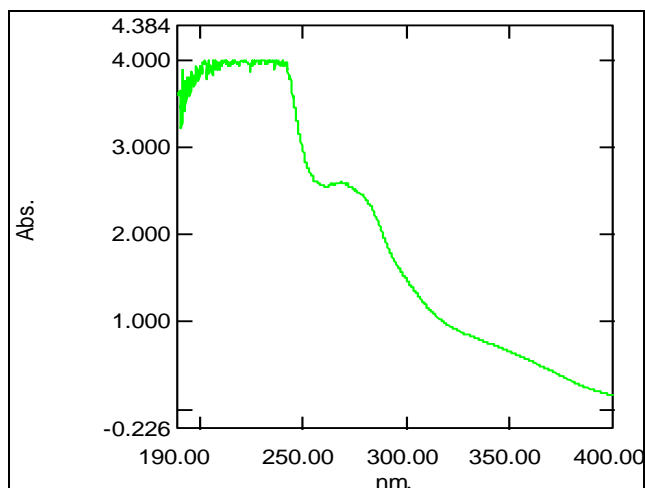
**Test 1:** To dry extract, add 5ml of 95% ethanol, few drop of concentrated hydrochloric acid and 0.5 g of magnesium turning. The finally pink color observed. (Shinoda test)

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

**Anti-solar activity**

**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). 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 computerized display reading of absorption spectra of the extract which is directly taken from spectrophotometer

**Results**

The UV scanning absorption spectra of the extract showed very strong absorption at 0.279 A with  $\lambda_{max}$  at 268 -nm. The graph extract also showed a plateau in range of 300-400 nm with moderate absorbance of ~0.3-0.1

**Discussion**

Quantitative investigation showed the presence of flavonoids in the extract. Flavonoids are well known for their pharmacological activities. It absorbs light and helps to protect photosensitive substances in leaves. Absorption of UV radiation is the main characteristics feature of the flavonoids. The results showed strong to moderate absorption of UV radiation and this ability is due to the presence of flavonoids.

**Conclusion**

The aqueous extract of leaves have ability to absorb UV radiation. The proved anti-solar activity of the plant shows its importance and prophylactic utility in anti-solar formulation. This will be a better cheaper and safe alternative to harmful chemical sunscreens that used nowadays in the industry.

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