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# STUDY OF METHANOLIC EXTRACT OF LEAVES NYCTANTHES ARBORTRISTIS AS AN ANTI-SOLAR

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## ABSTRACT

**Objective:** The present study aimed at the phytochemical examination and anti-solar activity of *Nyctanthes arbortristis Linn.* (leaf) methonolic 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 *Nyctanthes arbortristis Linn.* leaves were extracted with Methanol using soxhlet apparatus. Methanol 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 for absorption. **Results:** The UV scanning absorption spectra of the extract showed very strong absorption at 0.273 A with __max at 397 nm. **Conclusion:** The extract has an ability to absorb in the entire UV range.

**KEY WORDS:** *Nyctanthes arbortristis Linn.,* Soxhlet apparatus, Methanolic Extract, UV radiation, Anti-solar.

## INTRODUCTION

Many of the exposure of external skin to sunlight is enjoyable, excessive will effective ones through both heat of sunlight and ultraviolet radiation (UV) it generates. UV radiation which has a short wavelength than visible light is responsible for many of the harmful effects like blistering sunburn and long term problems like photocarcinogenesis, photoaging and photosensitivity. To avoid these harmful effects, there are many of the products available in market one it known as sunscreens. Sunscreens are chemical formulations which absorb sun's ultraviolet (UV) radiation on the skin exposed to sunlight and prevent the UV radiation from reaching in to the skin.[1,2] There are sunscreens which absorb following different types of

UV radiation such as UV-A (320-400 nm), UV-B (290- 320 nm), UV-C (100-290 nm) and Vacuo UV (10-100 nm).[3,4] The use synthetic sunscreens as photoprotectives restricted their use at cellular level and this limited use is because of their potential toxicity in humans and ability to interfere only in selected pathways of the multistage process of carcinogenesis. These rays have a lower energy level and a longer wavelength than UV-C. Their energy is not sufficient to split an ozone molecule; hence some of them extend down to the earth's surface. UV-A (315-400) rays do not have enough energy to break apart the bonds of the ozone, so UV-A rays passes the earth's atmosphere almost unfiltered and causes cancer. The ozone layer depletion decreases our atmospheres natural protection from the sun's harmful ultraviolet radiation. The UV radiation causes skin cancer, premature aging, cataracts and other eye damage, immune system suppression. As both UV-B and UV-A can be detrimental to our health, it is important that we protect ourselves. This can be done through a variety of ways. The sun protection products including sunscreen creams and lotions are available in the market to absorb or reflect the sun's UV radiation to protect the skin for such damages. The natural substances like anthraquinones, flavonoids and polyphenols have been considered as sunscreen agents because of their ultra violet radiation absorption[5] and antioxidant activities[6] various herbal formulations and chemicals are available to block UV rays and always prevent all types of skin from various types of damages. Our objective is to find out such leaves that are widely used as sunscreen from ancient time. *Nyctanthes arbor-tristis Linn*. commonly known as Harsinghar or Night Jasmine is one of the well known medicinal plants. Different parts of *Nyctanthes arbor-tristis* are known to possess various ailments by rural mainly tribal people of India (Orissa and Bihar) along with its use in Ayurveda, Sidha and Unani systems of medicines. Juice of the leaves is used as digestives, antidote to reptile venoms, mild bitter tonic, laxative and diaphoretic[7,8,9] *Nyctanthes arbor-tristis* Linn. is a large either sex were used for hepatoprotective activity. The shrub which is widely cultivated throughout India as a animals were grouped into five groups of six animals each garden plant. The bitter leaves are used in traditional and maintained on standard diet and water, *ad libitum.* All system of medicine for the treatment of rheumatism, the animal experimental protocol has been approved by sciatica and intestinal worms. The powdered seeds are the Institutional Animal Ethics Committee. Recommended for the treatment of scurvy[10,11,12]

**Fig. 1: Whole Plant of *Nyctanthes arbortristis Linn.***

## MATERIALS AND METHODS

**Collection and Identification:** The plant material *Nyctanthes arbortristis Linn.* were collected from the Satara district, Maharashtra, during the month of July in the year 2016 and authenticated by Dept. of Botany, Y.C.I.S, Satara, Maharashtra, India.

### Extraction

The pulverized dried *Nyctanthes arbortristis Linn.* leaves were extracted with methanol using soxhlet apparatus. Methanol extract were filtered & evaporated to dryness.[13,14,15]

**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.

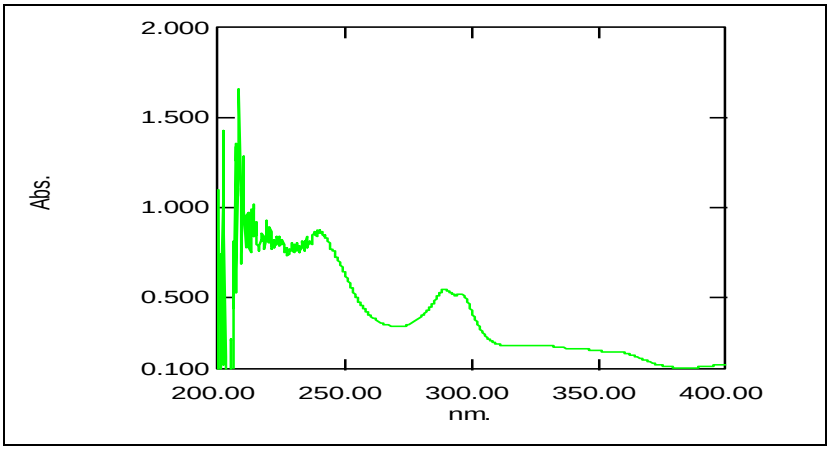
**Preparation of sample:** The sample preparations were carried out by 10 mg % w/v concentration dissolving into the 100 ml of distilled water (10 mg/100ml).

### Evaluation of anti-solar activity

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

## RESULT

The UV scanning absorption spectra of the Methanolic extract showed very strong absorption at 0.268 A with max at 386 nm. The graph extract also showed a plateau in range of 300-400 nm with moderate absorbance of ~0.3-0.1.




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

## DISCUSSION

The result obtained were showed the ability of extract to absorb UV radiation and hence proved its UV protection ability. The extract showed a prominent absorbance at 200–240 nm, while good absorbance at a range of 240–325 nm. The moderate absorbance was noted 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

The methanolic extract has an ability to absorb in the entire UV range. This property to absorb in the entire UV range can be utilized for the methanolic extract to be considered as a proper wide spectrum sunscreen and also in anti-ageing cream preparation, which would be a

better, cheaper and safe alternative to harmful chemical sunscreens used in modern day industry.

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