

STUDY ON ANTI-SOLAR ACTIVITY OF ETHANOLIC EXTRACT OF LEAVES OF IPOMOEA BATATAS LINN

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ABSTRACT

The sunlight which stimulates melanin and 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 *Ipomoea batatas* Linn 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 finalize result of extract was reported as maximum absorbance at 324 nm while the moderate absorbance at 260- 350 nm.

KEY WORDS: *Ipomoea batatas* Linn, 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 skins 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 rays 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 melanine.¹ Exposure to UV radiations from sun and other sources such as solarisms, 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 shin aging, wrinkles, loss of skin elasticity, dark patches, premature eye damage and skin damage leads to skin cancer.²⁻³ 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 leaves of *Ipomoea batatas* Linn (sweet potato) have shown antisolar activity. *Ipomoea batatas* Linn is a dicotyledonous plant belongs to family *Convolvulaceae*. There are many varieties of *Ipomoea batatas* linn and found in warm climate. *Ipomoea batatas* is an herbaceous perennial vine, which has purplish flower, large nutritious tuberous roots and heart shaped lobled leaves. The plant having simple leaves with petioles, ovate or cordate and margins entire, toothed or lobed. They can be pale green or dark green. The roots are edible and are long and tapering. The skin may be red, purple, brown or white in colour. Leaves are consumed as vegetable around the world, especially in South Africa, Southeast Asia, North America, and New Zealand. The leaves contain chemical constituent such as β -sitosterol, stigmasterol, beta-carotene, daucosterol, glucoside, gentisic acid, protocatechuic acid and two phenolic acids.⁴ The leaf decoction is used in folk remedies for tumors of the mouth and throat. Reported to be alterative, aphrodisiac, astringent, bactericide, demulcent, fungicide, laxative and tonic, sweet potato is a folk remedy for asthma, bug bites, burns, catarrh, ciguatera, convalescence, diarrhea, dyslactea, fever, nausea, renosis, splenosis, stomach distress, and tumors.⁵

Table 1. Certain health beneficial functions of *Ipomoea batatas*⁶⁻⁷

Health beneficial functions	Components
Antioxidative activity	Flavonoid, vitamins, anthocyanin
Reduction of liver injury	Anthocyanin, β -carotene
Antimutagenicity	Polyphenol, anthocyanin, vitamins,
Anticarcinogenesis	Ganglioside

Antihypertension	Polyphenolics, anthocyanin, vitamins,
Antimicrobial activity	Dietary fiber, polysaccharide
Anti-inflammation	Dietary fiber
Anti-diabetic effect	Acidic glycoprotein
Anticaries effect	Dietary fiber
UV protection effect	Flavonoids, vitamins

EXPERIMENTAL

Collection and Identification

Ipomoea batatas leaves were collected in Karad, Satara District, and State of Maharashtra. These specimens were identified by in the Herbarium of Department of Pharmacognosy, Shree Santkrupa College of Pharmacy, Ghogaon.

Extraction

Ipomoea batatas Linn leaves were freshly obtained and dried in sunlight and crushed into fine powder. The dry powdered leaves (100 g) was percolated in 90 % ethanol (1 L) by maceration with occasional shaking for two weeks and filtered. The extracts were evaporated to dryness.⁸

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)

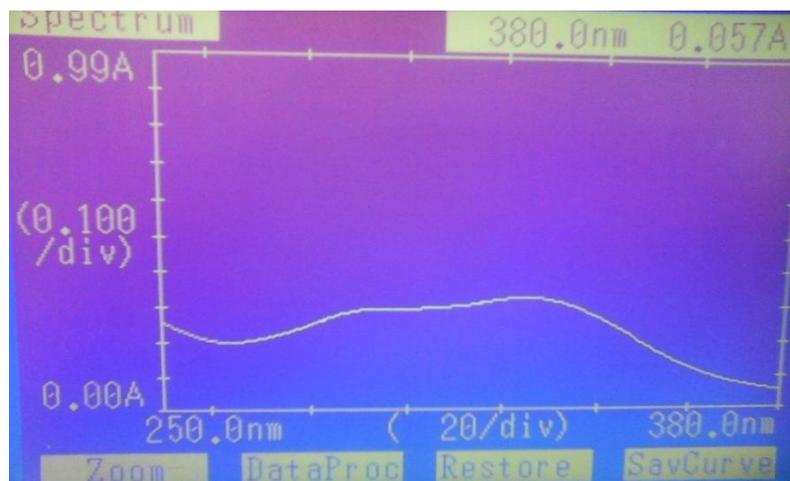
Test 2: To a small quantity of extract, add lead acetate solution, it shows yellow colored precipitate is formed.

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-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 λ_{max} at 324 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 324 nm. The moderate absorbance was noted at the range of 260-350 nm. After investigation of extract indicated the presence of flavonoid. It also absorbs light and helps to protect the photosensitive substances in the leaves 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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