



SUN PROTECTIVE ACTIVITY OF *Clitoria Ternata* Linn, *Canna Indica* Linn FLOWER

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ABSTRACT

Sunscreen resources mostly obtained from plants in form of natural substances which are ability to absorb ultraviolet ray in the UVA region. This paper evaluates UV absorption ability of flowers from *Clitoria ternata* Linn (Fabaceae), *Canna indica* Linn (Scitamineaceae), as an anti-solar agent. Extracts were prepared by maceration with a mixture of distilled water and methanol (1:1). The method is performed by UV spectrophotometry in the range of 200 to 400 nm and results of all the extracts shows effective UV absorption in the given range.

Key words: UV protection, *Clitoria ternata* Linn, *Canna indica* Linn, Hydro-alcoholic extract

INTRODUCTION

Sun is the source of energy for all forms of life on earth. Sun shade helps in the synthesis of vitamin D in turn promotes proper growth of bones by synthesizing calcium. As we know skin is the outermost organ of the body and so it is easily affected by the UV rays from the sun. Sun rays are the most harmful factor that affects skin and causes sunburns, Premature ageing of the skin photo carcinogenesis, Eye damage, Skin cancer and photo-ageing [1].

Direct exposure to UVC for a length of time would destroy the skin. Fortunately, UVC is completely absorbed by gases in the atmosphere before it reaches the ground. In any time the longer wavelength of UVB and UVA pass right through the atmosphere. The molecules in sunscreen absorb most UVB and prevent it from reaching the skin just as the molecules of the atmosphere absorb UVC and prevent it from reaching the ground.

Exposed sun ultraviolet light classify in to 3 types, by its wavelengths: UVA, UVB and UVC. The dimensions of their wavelengths are roughly 400 to 320 nm for UVA, 320 to 290 nm for UVB and 290-200 nm for UVC. Although it may seem backwards, the shorter the wavelength and the lower the number, the greater the energy level of the light and the more damage it can do [1].

Many chemicals in sunscreens have been found to be phototoxic (becoming toxic when exposed to light) causing burning, irritations, pigment changes and photoallergic effects such as hypersensitivity to chemicals [3]. 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 flowers that are widely used as sunscreen from ancient time. *Canna indica* Linn (Scitamineaceae) flowers are distant, 5-6.3 cm long, bracts 1.3-2.5 cm, oblong, membranous, obtuse, green; calyx - segment 6-8 mm, membranous, obtuse; corolla -segments 2.5 cm, erect, narrow, oblanceolate, acuminate, greenish or coloured; stamina segments longer than the corolla, 3 suberect, spatulate, 1 linear revolute. In the gold coast, the flowers are said to cure eye disease. [4]

Knowingly or unknowingly there is a sun protective activity in the daily food that we eat. This can be use as an alternative to commercial sunscreens. Some of the food that helps us from UV rays is as follows Tomato paste, Olive oil, Cabbage, Broccoli, Grape skins, Mustard greens, Yellow red and green peppers, Aloe Vera, caffeine, Blueberries etc [5].

Plants have been the basis for medical treatments through much of human history, and such traditional medicine is still widely practiced today [6]. *Clitoria ternatea*. Linn (Fabaceae) is known as *Aparajitha* and *Sangupusbi* in India, is a flowering plant. It is a persistent, herbaceous perennial legume and it is native to south-east Asia and widely distributed throughout the world mainly in tropical countries [7]. *Clitoria ternata* Linn flowers appear throughout warm weather, petioles 2-2.5 cm. long; stipules 4mm. long, linear, acute. flowers axillary, solitary; pedicels 8-13mm. long; bracts small, linear; bracteoles 6-13mm. long, roundish, obtuse[8].

Experimental

Plants

Clitoria ternata L, *Canna indica* L, flowers were freshly obtained from nursery at Sangli. Botanical identification was performed at the Department of Botany in Padmbhushan Dr. Vasantdada Patil Mahavidyalay, Tasgaon, Sangli 416312..

Preparation of Extract

Later the petals were separated and dried. 100 g powdered petals were extracted with Distilled water : methanol (1:1) by maceration. The extracts were evaporated to dryness on steam bath. Yield was obtained 2 gm (2 %), 1.9 gm (1.9 %) gm respectively.

The general flavonoid identification test was performed on all the four extracts [9].

Test 1 (Shinoda test): To dry extract, add 5 ml 95% ethanol, few drops concentrated hydrochloric acid and 0.5 g magnesium turnings. Pink colour observed.

Test 2: To small quantity of extract, add lead acetate solution, yellow coloured precipitate is formed.

Preparation of sample:

Samples were prepared in 8 mg % w/v concentration by using distilled water (8 mg / 100 ml). UV absorption spectra for all the four extracts were obtained in the range of 200-400 nm using Jasco UV spectrophotometer.

Following graphs indicates absorption spectra for all the 4 extracts in the given range.

Scanning spectra of extracts on UV-spectrophotometer.

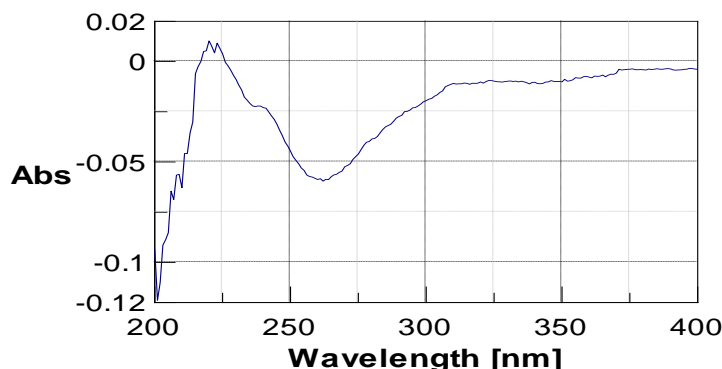


Fig. 1: indicates the spectrum obtained from Hydroalcoholic extract of *Clitoria ternata* Linn.

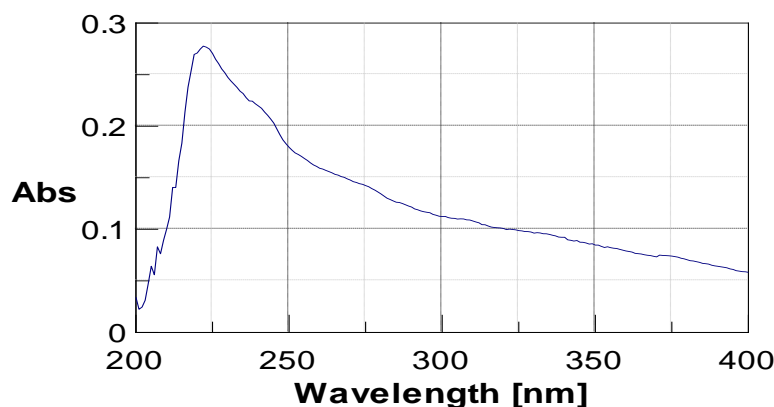


Fig. 2: indicates the spectrum obtained from Hydroalcoholic extract of *Canna indica* Linn.

RESULT AND DISCUSSION

The result indicated the ability of extracts to absorb UV radiation and hence proved its UV protection ability. All extract showed a prominent absorbance at 200 - 240 nm. The little absorbance was noted at the range of 310 - 340 nm of hydroalcoholic extract of *Clitoria ternata* Linn. Qualitative investigation indicated the presence of flavonoids in all the extracts and this UV protection ability may observe due to the presence of flavonoids.

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