

**PLANT PIGMENTS FOR SUNSCREEN: A SPECTROSCOPIC STUDY**

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Exposure to ultraviolet (UV) radiation may result in developing sunburns on the skin surface, and this may cause skin cancer. Sunscreens with ultraviolet B (UVB) absorbers are available to protect the skin from UV radiation. The effectiveness of sunscreen against UVB radiation is quantified by Sun Protection Factor (SPF), a parameter defined in the UVB region. Even though there are a variety of synthetic sunscreens available, the use of natural antioxidants in skincare products has attracted increased interest in recent years. Antioxidants, such as anthocyanin, flavonoids and phenolic acids, have the potential to quench the effect of reactive free radicals formed upon exposure to UV radiation. In this study, pigments from several flowers and fruits with a high content of anthocyanin were tested for UV absorbance and the SPF values were calculated. The highest SPF value of 18.54 was observed for pigment from Shoe flower (*Hibiscus rosa-sinensis*) - *cyanidin*, at a concentration of 0.03 g L<sup>-1</sup>. For further enhancement of SPF value, *lawsone*, a pigment from Henna tree was added and sunscreen was formulated using glycerin as the base cream with an improved SPF of 19.11. This sunscreen shows a comparable UV absorption similar to the commercially available sunscreens. Moreover, the calculation of SPF value of the sunscreen prepared was compared with that of commercially available sunscreens having SPF values of 15, 20+ and 30+. The vibrational spectroscopy was utilized for the structural characterization of *cyanidin* and *lawsone*. Furthermore, the pigments present in the sunscreen were stable for a range of temperatures and had a long shelf life. Overall, the results show that the combination of the above pigments acts as a natural UV protector.

**Keywords:** Antioxidant, Herbal sunscreen, Shoe flower, SPF, UV