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## Photoprotective potential in herbal sunscreen formulations developed from the medicinal plant, *Hibiscus furcatus*

## <u>C. Liyanaarachchi<sup>1</sup></u>, M. Napagoda<sup>1\*</sup>, S. Malkanthi<sup>1</sup>, K. Abayawardana<sup>1</sup>, S. De Soyza<sup>1</sup>, S. Witharana<sup>2</sup> and L. Jayasinghe<sup>3</sup>

<sup>1</sup>Department of Biochemistry, Faculty of Medicine, University of Ruhuna, Galle 80 000,Sri Lanka

<sup>2</sup>Faculty of Engineering, Higher Colleges of Technology, United Arab Emirates <sup>3</sup>National Institute of Fundamental Studies, Kandy 20 000, Sri Lanka \*mayurinapagoda@yahoo.com

Medicinal plants have been widely employed in traditional systems of medicine in Sri Lanka to treat different skin diseases as well as to adom the skin appearance. Hibiscus furcatus is one of the plants that has been used in folklore medicine as a dermatological therapeutic. Our previous investigations revealed a strong UV-filtering and antioxidant activity in hydroalcoholic extract of H. furcatus, thus the present study focuses on the development of effective herbal sunscreen formulation from this extract. The hydro-alcoholic extract of H. furcatus was incorporated into the aqueous cream base at different percentages (25%, 50% and 75%) and the UV absorption measurements were obtained for each formulation to determine its UV filtering potential and subsequently the sun protection factor (SPF). To compare the efficacy of the herbal formulations, a commercial synthetic sunscreen and the aqueous cream-base were used as positive and negative controls respectively. Our observations revealed that the formulation with 25% of the extract possesses the lowest SPF (7.5) while the formulation containing 75% of the extract has the highest SPF (18.4) giving an indication that when the extract concentration is higher, the protection from UV radiation is also higher. Interestingly, the commercial synthetic sunscreen product (SPF= 6.7) was also not found to be superior to this formulation. Further, the initial SPF value of this formulation has not subjected to any significant reduction after its exposure to direct solar radiation for 21 days, thus, demonstrating the photostability. The high UV absorbance in 260-365 nm range was evident for its broad-spectrum sunscreen potential against both UV-A and UV-B radiation. Since the sunscreens with SPF value of 15 or more are recommended as ideal formulations, this study clearly demonstrated the suitability of H. furcatus to be developed into a commercial herbal sunscreen and the experiments are underway to enhance its bioavailability via nanotechnology.

Keywords: Hibiscus furcatus, Sunscreen, sun protection factor