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**DEVELOPMENT OF HERBAL SUNSCREEN STICK USING HARUMANIS
MANGO (*Mangifera indica* Linn.) LEAF EXTRACTS**

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**DEVELOPMENT OF HERBAL SUNSCREEN STICK USING HARUMANIS
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**Final Year Project Report Submitted in
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ABSTRACT

DEVELOPMENT OF HERBAL SUNSCREEN STICK USING HARUMANIS MANGO (*Mangifera indica* Linn.) LEAF EXTRACTS

Excessive exposure to ultraviolet (UV) radiation causes significant skin damage, photoaging, and skin cancer, emphasizing the need for effective and safe sun protection. Conventional sunscreens often contain synthetic UV filters, which have raised concerns regarding skin irritation and environmental impact, thereby stimulating renewed interest in natural alternatives. This study aimed to formulate and evaluate a herbal sunscreen stick incorporating Harumanis mango (*Mangifera indica* Linn.) leaf extract as a natural photoprotective agent. The leaves were extracted using microwave-assisted extraction (MAE) with a 70:30 ethanol-water solvent system, yielding 21.26% (w/w) crude extract. *In-vitro* testing showed that SPF increased with extract concentration, reaching a maximum value of 36.19 ± 0.62 at 7,500 ppm, indicating ultra protection against UVB radiation. The extract concentration exhibiting the highest SPF was incorporated into a sunscreen stick formulation containing beeswax, shea butter, coconut oil, essential oil and cetyl alcohol. The final product showed skin-friendly pH range of 5.49-5.67, a melting point of 54.9-55.0 °C, proper homogeneity, good texture and spreadability. The *in-vitro* SPF of the formulated sunscreen was 18.53 ± 0.52 , providing moderate UVB protection for daily use. Overall, the study concluded that Harumanis mango leaf extract possesses significant photoprotective potential and can be successfully incorporated into a stable herbal sunscreen stick, promoting the use of plant-derived bioactive compounds as natural and eco-friendly alternative to synthetic sunscreen ingredients.

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