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ACCELERATED LIGHT EXPOSURE TEST (ALET) OF ACTIVE COMPOUNDS IN ROASTED COFFEE BEAN, RED CHILI AND TURMERIC EXTRACTS LOADED IN NANOEMULSION

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Roasted coffee bean (*Coffea arabica*), red chili (*Capsicum baccatum*) and turmeric (*Curcuma longa*) extracts exhibited excellent cosmeceutical and pharmaceutical benefits for various skin problems or diseases, mainly due to their anti-oxidant and anti-inflammatory properties [1]. However, the instability of active ingredients has diminished their applications. Therefore, the objective of this study was to evaluate the stability enhancement of the active compounds loaded in nanoemulsions compared to the solution counterparts [2]. Accelerated Light Exposure Test (ALET) under the International Conference on Harmonisation (ICH) guideline was conducted to stimulate the degradation of active compounds [3].

The results showed that half-life of curcumin in turmeric extract, capsaicin in red chili extract, and caffeine in roasted coffee bean extract were extensively reduced after light exposure for 12 hours. In contrast, preparation of mixed active compounds in the form of nanoemulsions could increase their half-lives significantly. In summary, the nanoemulsion formulation could protect the photodegradation of active compounds in these three extracts. In addition, the results could be used for further development of cosmetic products.

References

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