ABSTRACT

Background: Hyperpigmentation is a prevalent dermatological condition where excessive melanin synthesis occurs, which many individuals experience globally. One of the most common environmental causes of hyperpigmentation is ultraviolet B (UVB) irradiation, which induces melanogenesis to produce. For many years, hydroquinone-based skin whitening products have been considered the gold standard for treating hyperpigmentation. Even so, hydroquinone has many potential adverse effects, such as skin irritation and dermatitis. As a result, demands for non-hydroquinone-based skin whitening products with higher safety and effectiveness have been skyrocketing. Non-hydroquinone-based products inhibit melanin synthesis by regulating tyrosinase, as well as resolving melanocyte L-tyrosine supply, melanosome transfer, and tyrosinase activation due to sun exposure. This study aimed to compare the effectiveness of five different commercially available non-hydroquinone whitening products on melanoderma and erythema indexes in patients who experience hyperpigmentation due to UVB irradiation.

Objective: The objective of this study is to compare the effectiveness of five different commercially available non-hydroquinone whitening products on melanoderma and erythema indexes in patients who experience hyperpigmentation due to UVB irradiation.

Methods: A retrospective cohort study consisting of Dr. Sardjito Hospital patients with UVB-induced hyperpigmentation were investigated. 28 participants were induced with UVB light then given five different commercially available non-hydroquinone skin whitening products, which are a combination of Arbutin 2%, α-Lipoic acid, α-Hydroxyl Acid (AHA) 4%, and Sodium Ascorbyl Phosphate for product A; L-ascorbic acid 2-glucoside (LAA-2G) 2% for product B; Adapalene 0.1% for product C; a combination of Lactic acid 4%, Kojic acid, and Rumex occidentalis extract for product D; and finally, Retinoic acid 0.025% for product E. The melanoderma and erythema indexes were evaluated at week 0, week 2, and week 4 using Mexameter®. A paired t-test or Wilcoxon signed-rank test was then used to measure melanoderma and erythema indexes of each product to see the effectiveness and a repeated measures ANOVA test was performed to evaluate the significance of the means of different groups.

Keywords: *Hyperpigmentation, non-hydroquinone, whitening products, melanoderma index, erythema index, UVB*