

Thesis Title	The Effectiveness of 4% White Radish Root Extract Cream for Facial Whitening in Thais
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ABSTRACT

Background: Pale skin creates a vaguely supernatural aura. It can make an appearance look elegant, pretty and seductive. Southeast Asia and also Thai women want to look white like Japanese and Korean. The previous study showed that Bangkok women commonly used whitening cream for maintaining facial skin by purchased more than thousand baths every month. Synthetic products have been popular for several years in making the skin lighter. However, using these products provides serious drawbacks on the skin. The safer products are more expensive. Because of suitable for long term application, mild side effects and reasonable price, increasing attention has been paid to herbal plants for developing into modern medicine and cosmetic products. Previous study demonstrated that white radish root extract inhibits tyrosinase enzyme, the key enzyme in melanogenesis and also has antioxidant effect. White radish is cheap and grows easily in Thailand. The purpose of this research is to study the effectiveness of white radish root extract for facial whitening.

Objectives: To study the effectiveness of 4% white radish root extract cream for facial whitening in Thais.

Material and Methods: Thirty Thai volunteers, who matched with the inclusion criteria, were enrolled. 4% White radish root extract cream and standard cream base

(similar consistency, color and smell) were randomly applied, used block randomization, in a split face design (right and left sides), twice daily for 12 weeks. Furthermore, volunteers were received mild soap and broad spectrum sunscreen. Skin whitening was evaluated at 4th, 8th, 12th and 16th weeks by using mean melanin index measured by mexameter MX18. Volunteers' side effect was assessed by questionnaires and physician observation. Photographs from VISIA® Complexion Analysis System at 0th (before treatment) and at 4th, 8th, 12th and 16th (4 weeks after treated) weeks were compared and scored evaluation scales by 3 dermatologists. Volunteer satisfaction was evaluated at 12th week by questionnaires.

Results: Twenty-eight volunteers completed the study. Mean melanin index of the sides that applied 4% White radish root extract cream and standard cream base were statistically significant reduction from the baseline. Paired difference between both sides had statistically significant with $p < 0.001$ from 4th week of application without area dependent. The dermatologist evaluation and volunteer satisfaction rated for radish side as moderately satisfied and mildly satisfied for standard cream base, correspondingly. The side effect of 4% White radish root extract cream was very low.

Conclusion: The results of the study clearly demonstrated that white radish root extract was able to reduce melanin production in human volunteers with significant lightening effect and also less side effects. White radish root extract have a very promising potential for use as a safe, effective and economical whitening agent. Nevertheless, the highest concentration with lowest side effects, the duration that white radish root extract cream will reach its maximum lightening effect and more prolonged usage complication should be find out.

Keywords: White radish/Skin whitening agent/*Raphanus sativus* Linn./

Melanin reduction