UNIVERSITI TEKNOLOGI MARA | Fakulti Sains Gunaan

**SUBMISSION FOR EVALUATION**
**FINAL YEAR PROJECT 2 - RESEARCH PROJECT**

# DEVELOPMENT OF SERUM STICK FROM *Medusomyces gisevii* (KOMBUCHA) TO RESTORE FACIAL SKIN ASSETS


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**AUGUST 2024**

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# ABSTRACT


## DEVELOPMENT OF SERUM STICK FROM M*edusomyces gisevii* (KOMBUCHA) TO RESTORE FACIAL SKIN ASSETS

Kombucha, a fermented tea drink, is praised for its potential health benefits and antioxidant properties. Although studies suggest that kombucha has antioxidant properties, this trend is somehow inconsistent (some journals show that the antioxidant content is lower during fermentation while others show the opposite). This inconsistent research creates a gap in knowledge about the effectiveness of kombucha for topical applications such as wrinkle reduction and increased elasticity. Additionally, traditional liquid serums present challenges in travel and use. This research study investigated the potential of kombucha as an anti-aging agent in skin care, specifically in the form of a serum stick, and found that the antioxidant content in kombucha filtrate increased with fermentation time (comparison between day 7 and day 17), with the highest Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) values observed on day 17, specifically 2411.7647 mg GAE/L and 600 mg QE/L, respectively. The DPPH test confirmed this finding, showing a stronger antioxidant effect on day 17 (lower IC50 value) of 28.0178 mg/L. The antioxidant properties of kombucha are attributed to the presence of bioactive compounds such as polyphenols, and flavonoids, which have been shown to neutralize free radicals, reduce oxidative stress, and promote collagen synthesis, ultimately leading to better skin elasticity and reduce lines and wrinkles. A serum stick formulation incorporating kombucha filtration has been developed with a skin-friendly pH of 4.721, suitable for facial topical use. Patch testing showed good tolerance across different testers. User experience testing (organoleptic testing) identified areas for improvement regarding product smoothness and ease of use, with formulation 2 found to be superior to formulation 3.

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