

Specification : Mixed Thai Medicinal Plant Extract for Skin Whitening
(Manose RM-0077)

Application : An active ingredient for whitening cosmetic products

1. Name of the raw material : Mixed Thai Medicinal Plant Extract for Skin Whitening
2. Active components : Vitamin C, ellagic acid, gallic acid, phyllembelin, tannin, phyllemblic acid, lipids and emblicol⁽¹⁾
3. Common and scientific name/ Family of the plant : Bitter melon (*Momordica charantia* L./Momordica) and Indian gooseberry (*Phyllanthus emblica* L./Euphorbiaceae)
4. Physical appearance : Dark brownish solid⁽²⁾
5. pH : 4.53⁽²⁾
6. Standardization : HPLC fingerprint using gallic acid as a marker⁽²⁾
7. Solubility : Sparingly soluble in methanol / soluble in ethanol / very slightly soluble in water / practically insoluble in glycerin, propylene glycol and mineral oil⁽²⁾
8. Microbial contamination : No pathogenic microorganism with less than 1,000 cfu/g of the total plate count of bacteria, yeast and fungi which is conformed to the Thai FDA regulation⁽²⁾
9. Biological activities :
 - Tyrosinase inhibition activity *in vitro* with the IC₅₀ value of 19.31±1.49 mg/ml (kojic acid = 0.02±0.01 mg/ml)⁽²⁾
 - Tyrosinase inhibition activity in melanoma (B16F10) of 87.08±0.64% (kojic acid = 88.04±0.93%)⁽²⁾
 - Melanin inhibition activity in melanoma (B16F10) of 55.32±0.86% (kojic acid = 80.77±0.04%)⁽²⁾
10. Animal / human performance test : Gel containing 0.1% Indian gooseberry extract showed skin whitening effect, elasticity and hydration as well as anti-wrinkle in human volunteers after 84 days of application⁽³⁾

11. **Safety** : No cytotoxicity on human skin fibroblasts with cell viability of $76.65 \pm 4.79\%$ at 1 mg/ml (SLS 1 mg/ml = $14.59 \pm 0.16\%$)⁽²⁾
12. **Pharmaceutical, food supplement or cosmetic applications** : Cosmetic products for skin whitening
13. **Recommended concentrations in the product** : 0.1 – 2 %w/w⁽²⁾
14. **Storage** : Keep in tight and light protection container at room temperature
15. **Precautions** : None
16. **Cost per kg** : Please request

References

1. Chinmay D. and Shradha C. (2021). Phytochemical and pharmacological profile of *Embllica officinalis* Linn,. Journal of Medical pharmaceutical and allied sciences, 10: 2698-2703.
2. Manose In-house Project “Development of whitening serum containing herbal extracts” Manose Health and Beauty Research Center (www.manose.co), unpublished, 2022.
3. Puxvadee Chaikul P., Kanlayavattanakul M., Jariya Somkumnerd J. and Nattaya N. (2021). *Phyllanthus emblica* L. (amla) branch: A safe and effective ingredient against skin aging. Journal of Traditional and Complementary Medicine, 11: 390-399.