

Specification : Active HG-HD Loaded Nanovesicles for Hair Growth

Stimulation and Hair Blackening / สารสำคัญกระตุ้นการงอกและ

ช่วยให้เส้นผมดำ HG-HD เก็บกักในอนุภาคนาโน

(Manose RM-0040)

(Application : An active ingredient for hair growth stimulation and

hair blackening cosmetics / สารสำคัญในผลิตภัณฑ์เครื่องสำอาง

กระตุ้นการงอกของเส้นผมและช่วยให้ผมดำ)

1. Name of the raw material : Active HG-HD Loaded Nanovesicles for Hair Growth Stimulation and Hair Blackening
2. Active components : Extracts of Thai medicinal plants including Bamboo Grass, Soybean and Sorghum mixed with phospholipid and cholesterol
3. Common and scientific name/ Family of the plant : Bamboo Grass (*Tiliacora triandra* (Colebr.) Diels) / MENISPERMACEAE, Soybean (*Glycine max* L.)/ LEGUMINOSAE and Sorghum (*Sorghum bicolor* (L.) Moench)/ GRAMINEAE
4. Physical appearance : Turbid green-brownish dispersion with specific herbal odor
5. pH : 5.10
6. Standardization : HPLC fingerprint using linoleic acid as a marker
7. Solubility : Dispersible in water
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
9. Biological activities : - 5 α -reductase inhibition activity of 15.15 $\pm$ 1.31% at

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- 1 mg/ml (finasteride and dutasteride = 59.25 ± 1.31 and $59.79 \pm 1.12\%$, respectively)
- Tyrosinase stimulation activity on cell lines of $122.62 \pm 10.51\%$ at 1 mg/ml (theophylline = $525.93 \pm 20.44\%$ at 1 mg/ml)
 - Melanogenesis activity in cell lines of $64.90 \pm 10.34\%$ at 1 mg/ml (theophylline = $186.76 \pm 9.45\%$ at 1 mg/ml)
10. Animal / human performance test : -
11. Safety : - No cytotoxicity on human skin fibroblasts with cell viability of $122.11 \pm 9.92\%$ at 1 mg/ml (sodium lauryl sulfate = $5.48 \pm 0.93\%$ at 1 mg/ml)
- No skin irritation in human volunteers by the 4 h closed patch test
12. Pharmaceutical, food supplement or cosmetic applications : Hair growth promotion and hair blackening cosmetic products
13. Recommended concentrations in the product : 1-15 % w/w in hair serum, shampoo, hair lotion and hair tonic, etc.
14. Storage : Keep in dry and cool place, protected from light
15. Precautions : For external use only / avoid getting into eyes / rinse off and stop using when there is any undesirable effect
16. Cost per kg : Please request

References

1. Amali P., Shruthi B., Kingsley S. J. and Ignacimuthu S. (2014) Enhancing the *in vitro* development of root hairs for the production of sorgoleone in sorghum. **European Journal of Experimental Biology**. 4(4):183-189
2. Somvong K. and Prasitpuriprecha C. (2012) Antioxidant and melanogenesis stimulating activities of some Thai traditional medicinal plant extracts for grey hair treatment. **Isan Journal of Pharmaceutical Sciences**. 8(1): 116-125
3. Jeon H-Y., Kim S-H., Kim C-W., Shin H-J., Seo D-B. and Lee S-J. (2011) Hair growth promoting effect of black soybean extract *in vitro* and *in vivo*. **Korean Journal of Food Science and Technology**. 43(6): 747-753