

Specification : Safflower Extract / สารสกัดดอกคำฝอย (Manose RM-0081)

(Application : An active ingredient for hair darkening cosmetic products and body slimming dietary supplement products/ antioxidant products / สารสำคัญในผลิตภัณฑ์เครื่องสำอาง ช่วยให้ผมดำและผลิตภัณฑ์เสริมอาหารควบคุมน้ำหนัก/ ผลิตภัณฑ์ต้านปฏิกิริยาออกซิเดชัน)

1. Name of the raw material : Safflower Extract
2. Active components : Carthamin, carthamidin, isocarthamidin, hydroxysafflor yellow A, safflor yellow A, safflamin C and luteolin⁽¹⁾
3. Common and scientific name/ Family of the plant : Safflower (*Carthamus tinctorius* L.)/Compositae
4. Physical appearance : Dark yellowish brown semi-solid
5. pH : 4.18
6. Standardization : HPLC fingerprint using carthamin as a marker⁽²⁾
Carthamin is stable at pH 3-5.5, white light and UV but unstable at high temperature (50°C)⁽³⁾
7. Solubility : Soluble in water and ethanol⁽⁴⁾
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⁽⁴⁾
9. Biological activities :
 - Antioxidative activity by DPPH radical scavenging with the SC_{50} value of 0.36 ± 0.10 mg/ml (ascorbic acid = 0.10 ± 0.01 mg/ml)⁽⁴⁾
 - Melanin stimulation activity in melanoma (B16F10) with the melanin content relative ratio of $162.88 \pm 20.76\%$ at 1 mg/ml $55.32 \pm 0.86\%$ (theophylline at 0.1 mg/ml = $131.52 \pm 32.30\%$)⁽⁴⁾
 - Tyrosinase stimulation activity in melanoma (B16F10) with the tyrosinase content relative ratio of

- 150.41±28.16% at 1 mg/ml (theophylline at 0.1 mg/ml = 116.58±41.25%)⁽⁴⁾
- Lipase inhibition activity with the IC₅₀ value of 3.05±1.32 mg/ml (orlistat = 8.59±1.51 mg/ml)⁽⁵⁾
 - α -glucosidase inhibition activity with the IC₅₀ value of 2.39±0.31 mg/ml (orlistat = 0.20±0.03 mg/ml)⁽⁵⁾
10. Animal / human performance test : Reduce abdominal adiposity in male Wistar rats fed with a high-fat diet (HFD) while undergoing exercise training⁽⁶⁾
 11. Safety : No cytotoxicity on human skin fibroblasts with cell viability of 120.57±5.02% at 1 mg/ml⁽⁴⁾
 12. Pharmaceutical, food supplement or cosmetic applications : Cosmetic products for hair darkening⁽⁴⁾
Dietary supplement products for body slimming⁽⁵⁾ and antioxidant
 13. Recommended concentrations in the product : 1 – 5 %w/w for cosmetic products⁽⁴⁾
5 – 10 %w/w for dietary supplement products⁽⁵⁾
0.1-10% w/w for dietary supplement products (the solid crude extract 0.1%, while 10% for the 1% crude extract in propylene glycol)
 14. Storage : Keep in tight and light protection container at room temperature⁽⁴⁾
 15. Precautions : None
 16. Cost per kg : Please request

References

1. Asgarpanah J. and Kazemivash N. Phytochemistry, pharmacology and medicinal properties of *Carthamus tinctorius* L. Chin J Integr Med, 2013; 19(2): 153-1599.

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2. Wouters J., Grzywacz CM. and Claro A. Markers for identification of faded safflower (*Carthamus tinctorius* L.) colorants by HPLC-PDA-MS - ancient fibres, pigments, paints and cosmetics derived from antique recipes. *Studies in Conservation*, 2010; 55(3): 186-203.
 3. Fatahi N., Carapetian J. and Heidari R. Comparing stability of carthamin and safflower yellow pigments at pH, temperature and light, from safflower (*Carthamus tinctorius* L.) florets. *Research Journal of Biological Sciences*, 2009; 4(3): 250-253.
 4. Manose In-house Project “Development of serum containing extracts from Thai medicinal plants for hair darkening stimulation” Manose Health and Beauty Research Center (www.manose.co), unpublished, 2022.
 5. Manose In-house Project “Development of Dietary Supplement for Body Slimming from Medicinal Plant Extracts” Manose Health and Beauty Research Center (www.manose.co), unpublished, 2022.
 6. Silva P´erez EM., Alencar NMN., Figueiredo IST., Arag˜ao KS. and Gaba SVF. Effect of safflower oil (*Carthamus tinctorius* L.) supplementation in the abdominal adipose tissues and body weight of male Wistar rats undergoing exercise training. *Food Chemistry: Molecular Sciences*, 2022; 4: 100083.