

Specification of Myrobalan gall extract (Manose RM-002)

1. **Name of the raw material** : Myrobalan gall extract
2. **Active components** : Tannins and phenolic compounds such as gallic acid⁽¹⁾
3. **Scientific name of the plant / Family** : Myrobalan gall (*Terminalia chebula* Retz. gall)/
COMBRETACEAE
4. **Physical appearance of the raw material** : Dark brownish solid with specific odor
5. **pH of the raw material** : 2
6. **Standardization of the raw material** : HPLC fingerprint using gallic acid as a marker
7. **Solubility** : Soluble in water and ethanol
8. **Microbial contamination** : None
9. **Biological activities** : Anti-oxidant (DPPH, lipid peroxidation and chelating activity), MMP-2 (collagen degradation enzyme) inhibition and immunomodulatory effect
10. **Safety** : No skin irritation in human volunteers
11. **Animal / human performance test** : Anti-wrinkle and whitening in human volunteers⁽²⁾
12. **Pharmaceutical, food supplement or cosmetic applications**
: Anti-wrinkle and whitening cosmetic products and immunomodulatory food supplement products
13. **Recommended concentrations in the product (%)**
: 0.1-5 %
14. **Storage** : Keep in tight and light protection container at room temperature
15. **Precautions (if any)** : None
16. **Cost per kg** : -

References

1. Manosroi A, Jantrawut P, Akazawa H, Akihisa T, Manosroi J. Biological activities of phenolic compounds isolated from galls of *Terminalia chebula* Retz. (Combretaceae). *Natural Product Research* 2010, 24(20): 1915-1926.
2. Manosroi A, Jantrawut P, Akihisa T, Manosroi W, Manosroi J. *In vitro* and *in vivo* skin anti-aging evaluation of gel containing niosomes loaded with a semi-purified fraction containing gallic acid from *Terminalia chebula* galls. *Pharmaceutical Biology* 2011, 49(11): 1190-1203.