

**Specification of Sappan wood extract (Manose RM-009)**

1. **Name of the raw material** : Sappan wood extract
2. **Active components** : Steroids, triterpenoids, tannins and flavonoids<sup>(1)</sup>
3. **Scientific name of the plant / Family** : Sappan wood (*Caesalpinia sappan* L.)/  
LEGUMINOSAE-CAESALPINOIDEAE
4. **Physical appearance of the raw material** : Dark red-orange solid with specific odor
5. **pH of the raw material** : 6
6. **Standardization of the raw material** : HPLC fingerprint using brazilin as a marker<sup>(1)</sup>
7. **Solubility** : Soluble in water and ethanol
8. **Microbial contamination** : None
9. **Biological activities** : Anti-cancer<sup>(1)</sup> anti-oxidant (DPPH and chelating activity)<sup>(1)</sup>
10. **Safety** : No skin irritation in human volunteers / no toxic in rats treated with the extract at 1 g/kg BW for 90 days (pass the subchronic toxicity test)
11. **Animal / human performance test** : Anti-cancer and anti-oxidant in animals<sup>(1), (2)</sup>
12. **Pharmaceutical, food supplement or cosmetic applications** : Anti-cancer food supplement products and anti-wrinkle cosmetic 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. Kitdamrongtham W, Manosroi A, Akazawa H, Gidado A, Steinrut P, Manosroi W, Lohcharoenkal W, Akihisa T, Manosroi J. Potent anti-cervical cancer activity: Synergistic effect of Thai medicinal plants in recipe N040 selected from the MANOSROI III database. *Journal of Ethnopharmacology* 2013, 149: 288-296.
2. Badami S, Moorkoth S, Rai SR, Kannan E and Bhojraj S, Antioxidant activity of *Caesalpinia sappan* heartwood. *Biological and Pharmaceutical Bulletin*, 2003, 26(11): 1534-1537.