

Specification : Pineapple extract /สารสกัดสับปะรด

(Manose RM-0022)

(Application : An active ingredient for Anti-cancer, immunomodulatory, cardioprotective food supplements and anti-wrinkle cosmetic products/

สารสำคัญในผลิตภัณฑ์เสริมอาหารต้านมะเร็ง กระตุ้นภูมิคุ้มกัน และบำรุงหัวใจ/

ผลิตภัณฑ์เครื่องสำอางต้านริ้วรอย)

1. Name of the raw material : Pineapple extract
2. Active components : Phenolic acids, flavonoids and bromelain<sup>(1), (2)</sup>
3. Common and scientific name/ Family of the plant : Pineapple (*Ananas comosus* (L.) Merr.)/  
BROMELIACEAE
4. Physical appearance : Brown-yellowish solid with specific herbal odor
5. pH : 5
6. Standardization : HPLC fingerprint using bromelain as a marker
7. Solubility : Soluble 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 : Anti-cancer<sup>(2)</sup>, immunomodulatory effect<sup>(2)</sup>, fibrinolytic effect<sup>(3)</sup> and anti-inflammation
10. Animal / human performance test : Anti-cancer in animals<sup>(4)</sup> and platelet aggregation protective in heart disease patient<sup>(3)</sup>
11. Safety : No skin irritation in human volunteers
12. Pharmaceutical, food supplement or cosmetic applications : Anti-cancer, immunomodulatory cardioprotective food supplement products and anti-wrinkle cosmetic products
13. Recommended concentrations in the product : 0.1 – 5 % w/w
14. Storage : Keep in tight and light protection container at room temperature
15. Precautions : None
16. Cost per kg : Please request

## References

1. Manosroi W, Chankhampan C, Manosroi J, Manosroi A. (2015) *In vitro* anti-cancer activity comparison of the freeze-dried and spray-dried bromelain from pineapple stems. **Chiang Mai Journal of Science.** 42: 1-13  
(Corresponding author and co-authors are from Manose Health and Beauty Research Center)
2. Yapo ES, Kouakou HT, Kouakou LK, Kouadio JY, Kouame P, Merillon JM. (2011) Phenolic profiles of pineapple fruits (*Ananas comosus* L. Merrill) influence of the original sucker. **Australian Journal of Basic and Applied Sciences.** 5(6): 1372-1378
3. Heinicke RM, van der Wal L, Yokoyama M. (1972) Effect of bromelain (Ananase) on human platelet aggregation. **Experientia.** 28(10): 844–845
4. B´eez R, Lopes MTP, Salas CE, Hern´andez M. (2007) *In vivo* antitumoral activity of stem pineapple (*Ananas comosus*) bromelain. **Planta Medica.** 73(13): 1377–1383