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[1), (2)]
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[(2)], immunomodulatory effect[(2)], fibrinolytic effect[(3)] and anti-inflammation
10.	**Animal / human performance test**	:	Anti-cancer in animals[(4)] and platelet aggregation protective in heart disease patient[(3)]
11.	**Safety**	:	No skin irritation in human volunteers
12.	**Pharmaceutical, food**	:	Anti-cancer, immunomodulatory

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	supplement or cosmetic applications		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 (*Ananus 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 stempineapple (*Ananas comosus*) bromelain. **Planta Medica.** 73(13): 1377–1383