

# Study on the relationships between gum and texture in the functional softy candy

黃鎮富、徐泰浩

E-mail: 9019801@mail.dyu.edu.tw

## ABSTRACT

The application of organic jelly, which is made by Agar-Agar and Pectin and Gelatin, has become the most popular product in the market. The products in the market include gummy candy, spun sugar, Pure in jelly, winy Confectionery, France jelly and etc. The methods of individual using three gel have a lot of research, so we do not discuss about this topic. However, the more new gel producing, the more complex gel complexity variation. Furthermore, The change of consumption in the market is trend to the new jelly which is for health and emphasizes the organic. For the reason, the new organic food such as the organic jelly are producing. Therefore, the develop and research of the new special organic food can discover the evolution. And we can develop by the hundreds of various characteristic jelly with the mix gel to deal with physical variation after adding the organic materials and sugar for the purpose of health. In this propose, we discuss the structure, physical, chemical of those two gel, which are Pectin and Gelatin, and make a search for the application in jelly. And we discuss the detail of the difference of those two gum and combine konjac in the flow chart. According to addition the different quantity of konjac, which are 0.5 g, 1 g, 1.5 g and 2 g, to measure dissolve temperature and the variation of material of the production.

Keywords : functional ; softy candy ; gum

## Table of Contents

目錄封面內頁簽名頁授權書.....	iii	中文摘要.....	iii
.....v 英文摘要.....	v	.....vi 誌謝.....	vi
.....vii 目錄.....	vii	.....viii 圖目錄.....	viii
.....xii 表目錄.....	xii	.....xiii 第一章前言.....	xiii
.....1 第二章文獻回顧.....	1	.....3 第一節 食用膠的特性及應用.....	3
.....3 一、果膠(一)、果膠的分子結構及酯化度.....	3	.....3 (二)、果膠的製程.....	3
.....4 (三)、果膠的規格及特性.....	4	.....5 (四)、果膠溶解方法.....	5
.....6 (五)、果膠在機能性軟糖的應用及注意事項.....	6	.....6 二、明膠(一)、明膠的分子結構及等電點.....	6
.....12 (二)、明膠的製程.....	12	.....12 (三)、明膠的規格及特性.....	12
.....14 (四)、明膠溶解方法.....	14	.....15 (五)、明膠在機能性軟糖的應用及注意事項.....	15
.....16 三、蒟蒻(一)、蒟蒻的分子結構.....	16	.....24 (二)、蒟蒻的製程.....	24
.....24 (三)、蒟蒻的規格及特性.....	24	.....25 (四)、蒟蒻溶解方法.....	25
.....27 (五)、蒟蒻在機能性軟糖的應用及注意事項.....	27	.....27 第二節 機能性代糖和糖醇的特性及應用.....	27
.....33 一、機能性代糖的應用 二、應用於軟糖之機能性代糖的特性及製程(一)、低甜度甜味料.....	33	.....33 (二)、高甜度甜味料.....	33
.....39 第三節 機能性素材和添加物的特性及應用.....	39	.....45 一、機能性素材發展方向.....	45
.....45 (一)、維生素礦物質.....	45	.....47 (二)、天然藥草.....	47
.....47 二、機能性素材和添加物應用於軟糖的機能表現(一)、鈣.....	47	.....49 (二)、胡蘿蔔素.....	49
.....50 (三)、DHA.....	50	.....52 (四)、大豆卵磷脂.....	52
.....53 (五)、蜂膠.....	53	.....54 (六)、紫蘇籽.....	54
.....55 (七)、甲殼素.....	55	.....56 (八)、冬蟲夏草.....	56
.....58 第三章 材料與方法.....	58	.....59 一、複合膠質之添加比例對軟糖抗融性之探討(一)、實驗流程圖.....	59
.....60 二、材料與方法.....	60	.....61 (一)、樣品來源.....	61
.....61 (二)、添加物來源.....	61	.....61 (三)、儀器設備.....	61
.....61 三、分析方法.....	61	.....62 (一)、標準配方分析.....	62
.....62 (二)、流程分析.....	62	.....63 (三)、pH品質控制點分析.....	63
.....63 第四章 結果與討論.....	63	.....65 一、明膠的添加量與融點的關係.....	65

.....66	二、蒟蒻的添加量與融點的關係.....	67	三、三仙膠的添加量與融點的關係.....	69
.....68	四、結蘭膠的添加量與融點的關係.....	69	第五章 結論.....	71
.....71	參考文獻.....	74	圖目錄 圖一、果膠分子結構.....	9
.....9	圖二、酯化度表示法.....	10	圖三、蒟蒻的分子構造式.....	29
.....30	圖五、海藻糖的分子構造式.....	43	圖六、實驗流程圖.....	60
.....60	圖七、果膠凝膠控制點.....	64	圖八、軟糖形狀良好的狀態.....	70
.....70	圖九、軟糖表面離水的狀態.....	70	圖十、軟糖形狀溶解的狀態.....	70
.....70	表目錄 表一、果膠的製程.....	11	表二、各類胺基酸含量.....	20
.....21	表四、法國及WHO對食品級明膠的規格標準.....	22	表五、蒟蒻與其他膠質作用之膠強度.....	31
.....31	表六、蒟蒻在低酸下之黏度比較.....	32	表七、各類糖質特徵與製程原料.....	41
.....41	表八、各種寡醣與糖醇之甜度與特性.....	44	表九、不同礦物質所含之鈣比例.....	50
.....50	表十、標準配方.....	62	表十一、明膠的添加量與融點的關係.....	66
.....66	表十二、蒟蒻的添加量與融點的關係.....	67	表十三、三仙膠的添加量與融點的關係.....	68
.....68	表十四、結蘭膠的添加量與融點的關係.....	69		

## REFERENCES

- 參考文獻 1. 小山智久。1986。藥草在食品中的應用。食品開發。21(1):56-58。2. 山本正人。1993。以明膠製成具咀嚼感之凝膠軟糖。日本特許公報。平5-68316:85-90。3. 林瑩禎。1996。保健食品之簡介。食品工業。28(11):14-22。4. 林瑩禎。1996。保健食品市場近況。食品工業。28(11):31-36。5. 油谷遵。1995。消費者意識的變化與今後保健食品的發展。食品開發。30(9):16-17。6. 長井正信。1994。健康食品與特定保健食品之區隔與業界動向。New Food Industry。36(9):26-32。7. 裘仲元。1997。高壓下高甲氧基果膠凝膠作用中機能性代糖使用的研究。中興大學食品科學研究所之碩士論文pp18-31。8. 顏文俊。2000。糖果的新素材。食品資訊00(4):38-42。9. 顏文俊。2000。糖果產業2020。食品資訊00(6):20-21。10. 蘇鴻俊。1992。軟糖製造學。復文書局。台南。11. Benson, F. R. 1988. Industrial applications of malbit. Confectionery production . pp741-743. 12. Carr, J. M. PhD. 1996. Pectin and other hydrocolloids in gelled confections. Manufacturing confectioner. 76(11):55-61. 13. Christensen, S. H. 1993. Pectin 'Gel' as candymaker's texturizer. Candy industry. 158(4):34-40. 14. Gonze, M.; Schueren, F. V. Polyol solutions for sugar-free confectionery. Confectionery production. 59(7):523-526. 15. Jarrett, T. N. 1995. Aspartame in soft confections. Manufacturing confectioner. 75(11):82-83. 16. Kopchik, F. M. 1995. Polydextrose in soft confections. Manufacturing Confectioner. 75(11):79-81. 17. Lees, R. 1996. Confectionery jellies (Part I): Starch jellies ingredients used in their manufacture . Confectionery production . 62(11):20-21. 18. Law journal . 47(6):657-663. 19. Nil. 1996. Gelatine at the heart of Confectionery . Confectionery production. 62(6):2-7. 20. Nil. 1993. Nutra sweet's aspartame receives go ahead for use in hard, soft. Candy industry. 53-54. 21. Nil. 1993. New horizons in low-calorie bulk sweeteners. Confectionery production. 59(8):637-638. 22. Nil.1994. Readers' Problems. Confectionery production. 60(2):158-159. 23. Olinger, P. M. 1990. Sweetening the sugar-free challenge. Manufacturing confectioner. pp. 127-131. 24. Penny, C. 1992. Gelling good ingredients & processing international. pp.19-22. 25. Pepper, T. 1989. The Use of Xylitol in Confectionery production. confectionery production . pp 253-256. 26. Poppe, J. 1995. New approaches to gelling agents in confectionery. Manufacturing confectioner. 75(5):119-126. 27. Riedel, H. R. 1992. Gelatine and Gum sweets-separating and polishing. Confectionery production. 58(1):741-753. 28. Serpelloni, M. 1988. Sugarless confectionery-using sorbitol, Mannitol and Lycasin. Confectionery production. pp 418-424. 29. Sleaf, J. 1988. Formulation of pectin confections ingredient effects. Manufacturing confectioner. pp 77-79. 30. Tammy, P. ; Philip, M.O.1988. Xylitol in sugar-free Confections.Food Technology.pp98-106. 31. Wamecke, M. 1991. Gums and jelly products and formulations. Manufacturing confectioner. pp60-65.