以不同乾燥方式產製木瓜牛奶粉及風味添加物

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摘 要

本研究嘗試將木瓜牛奶以真空、熱風及噴霧三種乾燥方式製備成木瓜牛奶粉末，並藉由粉體性狀的探討，以了解不同加工條件對木瓜牛奶粉品質之影響。 在乾燥前處理方面，先將木瓜汁以微波殺菁6分鐘，並添加果膠酵素在50 ℃水浴下處理120分鐘後，添加奶粉及添加劑進行乾燥。本實驗選用真空及熱風乾燥溫度為50 ℃、60 ℃及70 ℃，控制固形物含量為30%，經BET方程式計算求得真空及熱風乾燥之單分子水分含量為乾燥終點，結果顯示真空乾燥60 ℃之乾燥產品普遍比熱風乾燥產品粉末較細，主要分布在0.125~0.25 mm 之間，溶解較快。但流動性為1.51 g/sec及假密度為0.46 g/ml，皆不及熱風乾燥產品佳，而品評結果顯示，兩種乾燥方法之整體感於統計上並無明顯差異。在乾燥助劑的選擇方面，添加麥芽糊精者較添加阿拉伯膠及羧甲基纖維素者之平均粒徑小且復水速度較快，故為較合適的乾燥助劑。調整原料之間比例，以木瓜汁20%/奶粉10%/麥芽糊精10%配方之官能品評較其他配方者佳。 於噴霧乾燥方面，本實驗先控制固形物含量為30%，求取較佳的出口溫度、噴霧速度、乾燥助劑及添加劑，再控制固形物含量為40%，調整原料間比例，求取較佳的配方。隨著噴霧乾燥溫度的升高，產品之假密度、復水速度、水活性及水含量皆有些微下降；流動速度、粒徑則有些微提高。隨著噴霧速度的升高，水活性、水含量及粒徑有些微升高，其他粉體性質無顯著的差異。隨著乾燥助劑添加量的增加，假密度、流動性、水含量、水活性及粒徑皆有所下降，黏度增加。添加亞硫酸氫鈉及磷酸三鈣對產品的色澤及流動性皆有正面的影響。調整原料之間比例，20%木瓜汁/20%奶粉配方其假密度、流動性及粒徑皆較木瓜汁20%/奶粉10%/麥芽糊精10%低，而品評結果顯示，以木瓜汁20%/奶粉10%/麥芽糊精10%為最佳的配方。較佳的乾燥條件為：出口溫度為100n4 ℃，進料速度為2.5 ml/min，添加麥芽糊精10%、0.05%亞硫酸氫鈉及0.2%抗結塊劑，以木瓜汁20%/奶粉10%/麥芽糊精10%為較佳的乾燥配方。

關鍵詞 : 木瓜牛奶

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