多重顆粒食品之電阻加熱=ohmic heating of multiple particle foods

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摘 要

電阻加熱為含顆粒流體食品無菌加工之有效加熱方法之一，以其可減少流體及固體顆粒間所受熱處理之差別。本研究在探討影響食品原料電導度之各項因子，包括單一電導度顆粒種類（高電導度及低電導度）、固體顆粒數之多寡、黏滯度等及其對加熱速率之影響。模擬多重顆粒食品，進行電阻加熱處理，研究結果發現低電導度顆粒數量較多時，加熱速率較緩，而當高電導度顆粒較多時，整體系統之加熱速率亦降低，顯示固體顆粒可能會形成電流通過之障礙。此外，混合高低電導度顆粒中，高電導度顆粒比例含量較多時，低電導度之顆粒可以被帶動加熱速率增高，反之，若低電導度顆粒較多時，少量高電導度顆粒亦可能被影響而降低其加熱速率。值得注意的是，無論高低電導度顆粒之比例如何變化，當總顆粒數增加時，電流被迫穿過顆粒，而使得顆粒溫度高於流體。在黏滯度影響方面，上述各項因子以 1 % CMC, 3 % 食鹽水為承載流體，進行電阻加熱處理。結果顯示，當黏滯度增加時，流體與顆粒之溫差拉大，可能是因為固流相間之熱傳減少之故。當高低電導度顆粒數混合時，因為相互影響之因子很多，同時加熱中有氣泡產生，因此加熱曲線較不穩定。

關鍵詞 : 電阻加熱 ; 電導度

目錄

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