海參體壁中膠原蛋白的萃取與特性分析

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摘 要

本研究以黑赤星海參體壁為原料萃取胃蛋白? ‘ i溶性膠原蛋白 (pepsin – solubilized collagen, PSC)，並與吳郭魚魚皮和豬皮所萃取之膠原蛋白進行特性分析及比較。一般成分分析中，黑赤星海參之水分含量最高，達 85.84 %，而粗脂肪與粗蛋白質含量分別為 0.30 % 與 10.29 %，可以看出海參屬於一種高蛋白、低脂肪的無脊椎動物。以粗膠原白產率來看，豬皮最高，達 26.12 %，其次為魚皮，海參最低。 市販海參大多為乾品復水，本研究發現乾品復水後的海參無法萃出膠原蛋白，推測可能乾燥過程或復水過程受熱，造成蛋白質變性所致。 以 SDS – PAGE 分析三物種萃取之膠原蛋白皆屬於第 I 型，就分子量言，海參膠原蛋白最小 (80~90 kD)；紫外光 – 可見光光譜分析顯示三物種皆在 230 nm出現最大吸收波峰，此乃蛋白質含有C=O, COOH和CONH2之官能基產生的；以傅立葉轉換紅外線光譜顯示三物種萃取之膠原蛋白皆有 amide A、I、II、III，此為蛋白質主要官能基產生的吸收波峰；胺基酸組成分析顯示三物種萃取之膠原蛋白，均以甘胺酸 (31 %)、脯胺酸 (9~12 %) 以及丙胺酸 (10~12 %) 之含量最高；示差掃描熱分析顯示三物種中以黑赤星海參膠原蛋白熱穩定性最低，此應與其生長溫度有關；另三物種膠原蛋白之保濕性及吸水性均較對照組 (甘油) 為佳，表示萃取之膠原蛋白其親水性基團含量較多。 綜合以上結果顯示，海參膠原蛋白之萃取雖然成本高、產率低，但就其基本特性言，海參膠原蛋白優於其他兩物種。唯需進一步研究，使於加工或其他應用上均能保持所萃膠原蛋白的特性，以最佳利用。

關鍵詞 : 海參、膠原蛋白、萃取、特性分析

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