微膠囊化鵪鶉蛋蛋黃IgY 之安定性研究

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摘 要

本研究將已純化之鵪鶉蛋蛋黃的IgY，利用噴霧乾燥法，分別以幾丁聚醣、阿拉伯膠、β-環狀糊精及Acryl-EZE進行微膠囊化包覆，探討pH值、溫度、胃腸道蛋白?、微生物脂多醣及儲藏時間對包覆之鵪鶉蛋蛋黃IgY活性影響。 結果顯示，酸鹼安定性以幾丁聚醣、阿拉伯膠及β-環狀糊精包覆者，於pH 5-9之殘存活性皆高於80%，以Acryl-EZE包覆者於鹼性環境下其殘存活性皆高於80%，而未包覆者其殘存活性比包覆者低(60-70%)。經包覆之IgY的熱安定性，隨著加熱溫度提高其殘存活性皆可維持於60%以上，表示這些包覆材料皆可保護IgY避免其受熱破壞，其中以幾丁聚醣為最佳，殘存活性高達80% (100℃)。而未包覆之IgY隨著溫度的上升其殘存活性急遽下降至20%。胃腸道蛋白?耐受性之試驗，以幾丁聚醣、阿拉伯膠與β-環狀糊精包覆者，經pepsin作用2 h後，其殘存活性約為90%，以Acryl-EZE包覆者與未包覆之IgY，經pepsin作用2 h後，其殘存活性約為80-90%，再經pancreatin作用4 h後，以Acryl-EZE包覆者，IgY之殘存活性仍可維持80%以上，而以幾丁聚醣、阿拉伯膠與β-環狀糊精包覆者，經pancreatin作用4 h後，IgY之殘存活性維持70%以上，未包覆之IgY經pancreatin作用4 h後，其殘存活性降至60%。與微生物脂多醣之作用，鵪鶉蛋蛋黃中之IgY對人體易感染之E. coli O55:B5具有抗原-抗體結合反應，其中以Acryl-EZE包覆者對E. coli O55:B5有專一性作用之IgY最多，其次為幾丁聚醣。經60天儲藏之安定性，儲藏溫度與包裝材質對IgY殘存活性有顯著影響，以4 ℃儲存之IgY較室溫儲存之IgY殘存活性高，以不透光鋁袋包裝比透光夾鍊袋殘存活性高。

關鍵詞 : 鵪鶉蛋 ; 鵪鶉蛋蛋黃IgY ; 幾丁聚醣 ; β-環狀糊精 ; 阿拉伯膠 ; Acryl-EZE ; 微膠囊化

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