# 牛初乳乳清水解物對LDL及細胞DNA氧化性傷害之抑制研究


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**摘 要**

本研究以母牛分娩後第二天之牛初乳為原料，將其分離出乳清後，利用alcalas 和flavourzyme酵素進行兩階段水解，產生乳清水解物，再以10 kDa超過濾膜過濾乳清水解物，取得乳清水解物之劃分物。本實驗以乳清水解物、10 kDa以上劃分物及10 kDa以下劃分物為分析樣品，分別對三者進行DNA (deoxynucleic acid)氧化傷害之抗氧化性及抑制LDL氧化進行探討。研究結果如下： 1.乳清水解物及其劃分物對Fenton reaction 誘導生物分子氧化傷害之影響： ⑴Fe3+-EDTA/H2O2/Asc誘導去氧核糖之氧化傷害： 乳清水解物及其劃分物均具有抑制去氧核糖氧化傷害之效果。乳清水解物、10 kDa以上劃分物及10 kDa以下劃分物於1 mg/mL濃度時，各別可抑制41.27、43.17及43.09 %之氧化傷害。 ⑵Fenton reaction 誘導DNA 單股斷裂： 乳清水解物及10 kDa以上劃分物於各實驗濃度下並不會促進DNA 單股斷裂，但是10 kDa以下劃分物於10 mg/mL濃度時卻會促進DNA 單股斷裂。 ⑶Fenton reaction 誘導2'-dG氧化生成8-OH-2'-dG： 乳清水解物及其劃分物均具有降低8-OH-2'-dG生成量之功效。三者之抑制能力依序為10 kDa以上劃分物>10 kDa以下劃分物>乳清水解物。 2.乳清水解物及其劃分物對bleomycin-Fe3+誘導DNA傷害之影響： 乳清水解物及其劃分物並沒有明顯的促氧化效果。此結果顯示乳清水解物及其劃分物並不會提高bleomycin-Fe3+所誘導之DNA傷害。 3.乳清水解物及其劃分物對銅離子誘導低密度脂蛋白氧化之影響： ⑴銅離子誘導低密度脂蛋白氧化形成TBARS： 乳清水解物及其劃分物均具有減少TBARS 形成之作用。在濃度0.001及0.01 mg/mL時，三者之抑制能力依序為10 kDa以上劃分物>10 kDa以下劃分物>乳清水解物。在濃度0.1 mg/mL時，三者之抑制能力依序為10 kDa以上劃分物>乳清水解物>10 kDa以下劃分物，10 kDa以下劃分物於此濃度會造成促氧化及低密度脂蛋白氧化之效果。 ⑵銅離子誘導低密度脂蛋白氧化形成共軛雙烯： 在只添加銅離子及低密度脂蛋白之控制組方面，其延滯時間為90分鐘。而添加乳清水解物劃分物則具有較佳抑制能力，在1.0 及10 mg/mL濃度下，其延滯時間為270分鐘。 關鍵字：牛初乳、乳清蛋白、乳清水解產物、抗氧化性、氧化傷害。



關鍵詞 : 牛初乳;乳清蛋白;乳清水解產物;抗氧化性;氧化傷害


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