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關鍵字(中)	黑豆；染料木黃酮；黏附分子；α 腫瘤致死因子；主動脈內皮細胞；核因子 κB 聚丙烯醯胺 分析法 心血管 墨點法 敏感性
關鍵字(英)	Black soybean; Genistein; Adhesion molecules; TNF-α; Human aortic endothelial cells; NF-κB
摘要(中)	摘 要 氧化壓力與發炎反應是影響致粥狀最重要的因素與促進者，由於影響血管內皮黏附分子的表現，在動脈粥狀硬化形成和慢性發炎中扮演重要角色。許多研究顯示膳食補充大豆食品可降低心血管疾病，尤其是黑豆富含的異黃酮素包括染料木黃酮(genistein)、二羥異黃酮(daidzein)，並且在其種子外皮富含矢車菊色素配質(cyanidin)，而其所具有良好的抗氧化物質是否能在細胞內調控對活性氧敏感性的訊息傳遞路徑之基因表現，進而影響黏附分子的表現與致粥狀的發展。是以本研究主要探討黑豆萃取物及其主成分 genistein、 daidzein 和 cyanidin 對前發炎細胞激素腫瘤壞死因子（TNF-α）誘導人類主動脈內皮細胞(human aortic endothelial

	cells；HAEC)發炎反應的影響。首先以 MTT 檢測樣品對 HAEC 的影響，結果顯示黑豆萃取物在 200 μg/mL 濃度以下及 genistein、daidzein 和 cyanidin 各分別在 40、40、20 μM 濃度以下對 HAEC 不具細胞毒性；將 HAEC 預先以 100 μg/mL 黑豆萃取物及 10 μM genistein、daidzein、cyanidin 和 aspirin 處理 18 小時，可顯著降低人類單核球細胞株-U937 與 HAEC 間的黏附性，其抑制率依序為 98.2%、97.2%、98.8%、93.1% 和 90.9%；利用細胞酵素連結免疫分析法顯示：genistein 與對照組 aspirin 可明顯降低細胞間黏附分子（ICAM-1）表現分別達 17.1% 和 14.5%；黑豆萃取物及 genistein、daidzein、cyanidin、aspirin 亦可顯著降低血管黏附分子（VCAM-1）表現依序達 47%、56.8%、59%、38.9% 和 42.7%；而對 E-selectin 的表現則不具影響。經由 10%聚丙烯醯胺膠體電泳分析和西方墨點法分析，黑豆萃取物，可顯著降低腫瘤壞死因子所引起 NF-κB p65 的表現。綜合研究顯示黑豆萃取物及其主要成分有助於減緩發炎反應及動脈粥狀硬化的進展。
摘要(英)	Abstract Oxidative stress and inflammation are thought to be an important contributor and promoter of atherogenesis. While altered expression of cell adhesion molecules by the arterial endothelium plays a major role during atherogenesis and chronic inflammation. Several studies have demonstrated that the dietary intakes of soy foods were associated with reduction of cardiovascular risk. Interestingly, black soybeans rich in isoflavones (genistein and daidzein), and its seed coat contains cyanidin. Antioxidants may modulate of oxidative stress which may trigger intracellular signaling pathways influencing gene and adhesion molecules expression and atherogenesis. We determined the potential anti-atherogenic activity of black soybeans extract and its components by examining their effects on monocytes adhesion of human aortic endothelial cells (HAEC), adhesion molecules expression, and NF-κB-p65 expression. The black soybean extract (less than 200 μg/mL) and its components such as genistein, daidzein and cyanidin (less than 40, 40 and 20 μM, respectively) had no toxicity to HAEC. Pre-incubated of HAEC with 100 μg/mL black soybean extract and 10 μM of genistein, daidzein, cyanidin and aspirin for 24h, significantly decreased adhesion of U937 monocytic cells to TNF-α-stimulated HAEC by 98.2%, 97.2%, 98.8%, 93.1% and 90.9%, respectively. Ten micromoles of genistein, daidzein, cyanidin and aspirin significantly suppressed the expression of vascular cell adhesion molecule-1(VCAM-1) by 47%, 56.8%, 59%, 38.9% and 42.7%, respectively. Genistein and aspirin significantly decreased intracellular adhesion molecule-1(ICAM-1) expression by 7.1% and 14.5% while all treatments had no effect on E-selectin. Pretreated black soybean extract could significantly inhibited NF-κB-p65 activaty in TNF-α-stimulated HAEC was assayed by SDS-PAGE and western blot. In conclusion, black soybean and its components may have potential on anti-inflammatory and anti-atherogenesis.
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