台灣鄉土蔬菜 - 紅甘藷葉粗萃物對人類結直腸癌細胞之影響

Effect of crude extract from purple sweet potato leaves on human colorectal carcinoma cell

中文摘要

本研究以台灣地區鄉土蔬菜中多酚類含量較高之紅甘藷葉（purple sweet potato leaves, PSPL）進行探討，以瞭解其對結直腸癌是否具有影響。實驗設計係以細胞模式進行，選用人類結直腸癌細胞株（HT-29）作爲實驗材料，給予 HT-29 細胞株不同濃度之紅甘藷葉粗萃物，在不同時間作用下，觀察其對 HT-29 細胞增生、分化及細胞凋亡（apoptosis）的影響。研究結果顯示，濃度爲 0.2、0.3、0.4、0.5、0.6 及 0.8 mg/mL 之紅甘藷葉粗萃物，添加於細胞中 48 及 72 小時後，可明顯抑制 HT-29 細胞之生存率（$p<0.05$）。在細胞分化部份，則有隨著濃度增加而增加細胞分化之趨勢。當以流式細胞儀分析細胞週期變化之結果顯示，於細胞中添加濃度爲 0.15、0.3 及 0.6 mg/mL 之紅甘藷葉粗萃物 48 小時後，可增加 sub G0 階段的細胞數量百分比（$p<0.05$）。而以 TUNEL 螢光染色法分析細胞內 DNA 裂片（DNA fragmentation）時之結果顯示，濃度 0.3 mg/mL 及 0.6 mg/mL 之紅甘藷葉粗萃物可顯著增加 DNA fragmentation 之比例，代表具有誘發細胞凋亡之現象。以 Annexin-V/PI 螢光染劑偵測細胞凋亡與細胞壞死之結果顯示，於細胞中添加濃度爲 0.3 及 0.6 mg/mL 之紅甘藷葉粗萃物 36 小時後，確實可誘發細胞發生 apoptosis，但於 0.6 mg/mL 濃度則同時會增加細胞 necrosis。綜合以上結果得知，紅甘藷葉粗萃物對於人類結直腸癌細胞株（HT-29），具有抑制細胞生長及誘導細胞凋亡之現象產生。

英文摘要

The aim of this study was to investigate the effects of crude extracts from indigenous vegetable - purple sweet potato leaf (PSPL) on the proliferation, differentiation and apoptosis of human colorectal carcinoma cell (HT-29 cell) The results obtained from MTS assay showed that PSPL crude extract (0.2, 0.3, 0.4, 0.5, 0.6 & 0.8 mg/mL) could inhibit HT-29 cell proliferation ($p<0.05$）, but did not increase cell differentiation conspicuously. In addition, the flow cytometric analysis showed that after 48 hr treated with PSPL crude extract (0.15, 0.3 & 0.6 mg/mL) could increase sub G0 phase (apoptotic cells) cell numbers ($p<0.05$）. The test of Annexin-Ⅴ/PI fluorescence showed that PSPL crude extract (0.3 & 0.6 mg/mL) could significantly induce the cell apoptosis after 36 hr treatment, but in high dose (0.6 mg/mL) of PSPL crude extract also could induce cell necrosis. In conclusion, the PSPL crude extract from indigenous vegetable -- purple sweet potato leaf would suppress colorectal carcinoma cell growth by induction of apoptosis, but in higher dose may also induce

cell necrosis to mediate the growth inhibition.