天麻萃取物之抗氧化活性與細胞保護效用

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摘 要

天麻中主要有效成分為天麻素(gastrodin)與其代謝物天麻?元(p-Hydroxybenzyl alcohol, 4-HBA)，兩者均具有特殊生理活性。已有研究發現，天麻素具有抗癲癇、治療肢麻癱瘓、鎮靜、抗驚厥、抗炎、鎮痛、抗衰老及改善記憶學習等功效。氧化壓力會產生自由基，進而引起蛋白質、醣類及脂肪等成分進行連鎖反應，而破壞體內的細胞膜、蛋白質及核酸等，人體許多功能逐漸破壞，造成老化、癌症、動脈粥樣硬化(atherosclerosis)、發炎反應和免疫問題等疾病。本研究使用中藥天麻，利用不同溶劑(去離子水、甲醇或70%乙醇)之熱回流萃取天麻成分，測定萃取率、抗氧化活性試驗及細胞生存能力之測定。抗氧化活性測試包含α, α-diphenyl-β-picryl -hydrazyl (DPPH)自由基清除能力、還原力試驗和相對還原力、超氧歧化?(superoxide dismutase) 活性、ABTS陽離子自由基清除活性及抑制硫代巴比妥酸鹽反應產物(thiobarbituric acid reactive substances, TBARS)生成之活性，並測定抗氧化物質總酚含量。結果顯示，天麻不同溶劑萃取率分別為：去離子水萃取物40.9%、甲醇萃取物20.6% 和乙醇萃取物9.77%；總酚含量之測定以甲醇萃取物最高，達6.48 mg/g；DPPH自由基清除能力以甲醇萃取物最佳，在濃度0.4 mg/mL時達到97.3%；在還原力測定中，去離子水萃取物有最高還原力，其相對還原力在0.8 mg/mL達23.3%；超氧歧化?活性測定中，乙醇萃取物有最高活性，在濃度1 mg/mL時達到44.9%；ABTS陽離子自由基清除活性中，乙醇萃取物有最高活性，在濃度0.1 mg/mL時達到26.8%；抑制硫代巴比妥酸鹽反應產物之活性測定，乙醇萃取物具有最高活性，在濃度1 mg/mL時達到93.4%。以缺氧再灌氧模式對PC-12細胞株存活度測定中，70%乙醇萃取物有最高保護性，在濃度100 μg/mL時達到81.3%; 以過氧化氫模式對PC-12細胞株存活度測定中，標準品4-HBA 之細胞保護活性較高，在濃度50 μg/mL 時約達97.1%; 熱迴流法之70%乙醇萃取物較差，其最佳保護活性在濃度50 μg/mL 時，細胞存活度仍達94.3%。

關鍵詞 : 天麻、天麻素、清除自由基能力、TBARS

目錄

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