行政院國家科學委員會專題研究計畫　成果報告

大蒜含硫化合物抗發炎、抗感染及保護腎臟功能之活體研究

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一、計畫名稱: 大蒜含硫化合物抗發炎、抗感染及保護腎臟功能之活體研究

二、計畫編號: NSC-94-2320-B-040-032

三、主持人: 殷梅津　中山醫學大學營養學系

四、計畫摘要: 以糖尿病老鼠為對象，注射或餵食大蒜的含硫化合物以探討這些含硫化合物是否能夠有效的保護腎臟功能並改善糖尿病老鼠的纖維化、緩和發炎反應以維持 Th1 及 Th2cytokine 的平衡，以及抑制院內感染之抗藥性菌種所引起的血流感染。研究結果將可以深入了解這些來自蔥科植物的高安全且低副作用之天然成份應用於糖尿病病情控制之多重醫療功效。

五、計畫成果: 大蒜之含硫化合物在糖尿病活體內可以抑制發炎異常、抗感染及保護腎臟功能等效果。研究結果已投稿至 Life Science。摘要如下:

The dose-dependent effect of *s*-ethyl cysteine (SEC), and *s*-methyl cysteine (SMC) against diabetic nephropathy in Balb/cA mice were examined. To induce diabetes, mice were treated with streptozotocin i.p. for 5 consecutive days. SEC and SMC at 0.5, 1, 1.5, 2 g/L were added to the drinking water for 8 weeks supplement. After 6 wk supplementation, blood urea nitrogen, creatinine, urinary albumin, urinary type IV collagen, renal glutathione level and glutathione peroxidase activity, renal IL-6 and IL-10 levels, renal fibronectin and TGF-β1 levels, renal glomeruli PKC activity were measured. Results showed that the intake of SEC caused significantly dose-dependent increase in insulin and decrease in blood glucose, BUN, creatinine, also decrease in urinary albumin and type IV collagen (P<0.05). SEC intake caused dose-dependent MDA decrease and GSH increase (P<0.05), but no dose-dependent increase in renal GPX activity. SEC treatments caused in significantly dose-dependent IL-6 decrease and IL-10 increase (P<0.05). SMC treatments also showed antioxidant and antiflammatory effects (P<0.05), but no dose-dependent effect. When compared with diabetic groups, SEC or SMC intake significantly suppressed renal PKC activity and the production of fibronectin and TGF-beta1 (P<0.05); however, only SEC treatments showed dose-dependent effect. These agents exhibited the anti-fibrogenic effect via suppressing PKC activity, and reducing TGF-β1 production, which consequently decreased fibronectin and type IV collagen production. Based on the observed anti-oxidative, anti-inflammatory and anti-fibrogenic effects, SEC and SMC might be potent agents for the treatment of diabetic nephropathy.