• 系統編號	RW9703-0262
• 計畫中文名稱	利用初代人類軟骨細胞與關節炎鼠模式，開發小葉葡萄應用於關節炎保建之研究
• 計畫英文名稱	The Use of Arthritis Animal Experiments and Human Osteoarthritic Chondrocytes to Develop Vitis thunbergii against Arthritis
• 主管機關	行政院農業委員會
• 計畫編號	96 農科-1.2.1-科-a1(21)
• 執行機構	台北醫學大學藥學系(所)
• 本期期間	9601 ~ 9612
• 報告頁數	12 頁
• 使用語言	中文
• 研究人員	王靜瓊 Ching-Chiung Wang
• 中文關鍵字	小葉葡萄；關節炎；人類軟骨細胞
• 英文關鍵字	Vitis thunbergii；Arthritis；Human Osteoarthritic Chondrocytes
• 中文摘要	關節炎是目前老人疾病中，常用中草藥輔助治療的疾病之一。而小葉葡萄是台灣特有種之藥用植物，被廣用於許多老年疾病，如：筋骨酸痛、肝炎、胃痛、眼疾、跌打損傷及關節炎等。因此本研究爲開發臺灣原生種小葉葡萄應用於預防保健食品研究之子計畫三：利用初代人類軟骨細胞模式，開發小葉葡萄應用於關節炎保建之研究。研究結果顯示：主幹莖及枝幹對 LPS 刺激初代人類軟骨細胞釋放 PGE2 抑制 50%之濃度 49.28 μg/ml 及 59.26 μg/ml。而利用主莖分離得到之 Ampelopsin C、(+)-cis-ε-Viniferin 及 Resveratrol 可抑制 LPS 誘導之 PGE2 產生，抑制 50%之濃度分別爲 59.0、70.49 及 8.51 μg/ml。而 (+)-cis-ε-Viniferin 及 Resveratrol 對 IL-1 誘導 GE2 之產生有抑制作用，其抑制 50%之濃度分別爲 68.51 及 18.9 μg/ml。主莖萃取物及 Ampelopsin C、(+)-cis-ε-Viniferin 及 Resveratrol 抑制軟骨細胞發炎反應之機轉，推測應是透過抑制 COX-2、iNOS 及 MMP-3 蛋白表現。
• 英文摘要	Arthritis is a complicated infirmity of joint which is characterized by joint stiffness, inflammation and pain. Clinicians as well as patients are still waiting for efficacious remedies. Besides, Arthritic patients frequently used alternative and complementary medicine to alleviate their joint discomfort or to maintain the health of their joints. Vitis thunbergii is a native medicinal plant of Taiwan used in many age-related illnesses such as arthralgia, hepatitis, gastritis, eye disorder, sprain and strain, etc. However, there is no clear mechanistic exploration of V. thunbergii to explain why this plant is useful in rheumatism. The purpose of this study is to investigate the effects of V. thunbergii on cartilage and its anti-arthritic mechanisms. Different parts (stem, branch, leaf and root) of V. thunbergii

were extracted with methanol and the extracts were employed in the following experiments. Primary human chondrocytes (PHCs) stimulated with lipopolysaccharide (LPS) and interleukin-1 beta (IL-1β) would enhance the release of cartilage degrading enzymes, i.e. prostaglandin E2 (PGE2) and metalloproteinase (MMP-3, -13), and this model was used in the experiment. Indomethacin, a documented NSAIDs served as positive control in the study. PHCs were treated with V. thunbergii extracts or indomethacin with or without LPS or IL-1β. Because stem and branch parts of V. thunbergii had no cytotoxicities on the PHC at 100 micro-g/ml, we used these two parts to do the following PGE2 inhibitory experiments. The results expressed indomethacin inhibited PGE2 production in LPS-stimulated PHCs, while the stem part of V. thunbergii showed the more significant and dose-dependent inhibitory effects (25 micro-g/ml to 100 micro-g/ml, about 60% inhibition rate at 100 micro-g/ml) on PGE2 expression than the branch part. However, in the IL-1β stimulation, only the high dose of stem part displayed the inhibitory effects (about 20% inhibition rate at 100 micro-g/ml)on PGE2 expression. Therefore, the active components were isolated from the stem part of V. thunbergii and oligomers of resveratrol were obtained, (+)-vitisin A, ampelopsin, (+)-ε-viniferin and resveratrol. Resveratrol showed the strongest inhibitory effects in PGE2 productions and MMP-3, -13 expressions after the LPS or IL-1β treatment. This result implies V. thunbergii had well chondroprotective effects on inflammatory arthritis.