• 系統編號	RN9408-0557
• 計畫中文名稱	Andrographolide 的微生物轉換及生物活性評估
• 計畫英文名稱	Microbial Transformation of Andrographolide and Biological Evaluation
• 主管機關	行政院國家科學委員會 • 計畫編號 NSC92-2320-B038-040
• 執行機構	臺北醫學大學藥學系(所)
• 本期期間	9208 ~ 9307
• 報告頁數	5 頁 • 使用語言 中文
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• 中文關鍵字	穿心蓮內酯; 抗氧化; 微生物轉換; 奴卡氏菌
• 英文關鍵字	Andrographloide; Antioxidant; Microbial transformation; Nocardia sp.
• 中文摘要	利用 Nocardia sp.進行微生物轉換 andrographolide (穿心蓮內酯)可將 acetyl group 引入 19-、3-以及 3,19-的位置(2-4)；此外也得到一新的 hydroxylated 化合物 ent-(14R)-3α,14,15,19-tetrahydroxy-labda- 8(20),12E-dien-16-oic acid-15-lactone (5)，這是第一次發現 Nocardia sp.具 acetylation 及 hydroxylation 的作用。此外受質以化學合成方式進行乙醯化反應可得到代謝物 2 和 4。將 4 結構中的 14-OH 進行化學修飾得到 andrographolide 3,14,19-O-triacetate (6)、 andrographolide 3,19-O-diacetyl-14-O- propionate (7)、andrographolide 3,19-O- diacetyl-14-O-butyrate (8)、andrographolide 3,19-O-diacetyl-14-O-valerate (9)、 andrographolide 3,19-O-diacetyl-14-O- isovalerate (10)、andrographolide 3,19-O-diacetyl-14-O-trans-cinnamate (11)以及 14-deoxy-11,12-didehydroandrographolide 3,19-O-diacetate (12)。經過 DPPH 和 superoxide anion 清除實驗，化合物 12 具抗氧化的活性，這些 andrographolide 類似物將繼續進行其它生物活性試驗及作爲代謝相關研究之標準品。
• 英文摘要	Utilizing Nocardia sp. to preparative-scale microbial transformation of andrographolide, the acetyl group is introduced into 19-, 3-, and 3,19- positions (2-4). A new hydroxyla- ted compound, ent-(14R)-3？\,14,15,19-tetra-hydroxy-labda-8(20),12E-dien-16-oic acid acid-15-lactone (5) is also obtained. This is the first report that Nocardia sp. could proceed acetylation and hydroxylation. In addition, chemical acetylation of andrographolide yielded metabolites 2 and 4. In order to prepare more andrographolide analogues for biological evaluation, chemical modification of 14-OH of 4 was carried

out. Thus, andrographolide 3,14,19-O-tri-acetate (6), andrographolide 3,19-O-diacetyl-14-O- propionate (7), andrographolide 3,19-O- diacetyl-14-O-butyrate (8), andrographolide 3,19-O-diacetyl-14-O-valerate (9), androgra- pholide 3,19-O-diacetyl-14-O-isovalerate (10), andrographolide 3,19-O-diacetyl-14-O- trans-cinnamate (11) and 14-deoxy-11,12-didehydroandrographolide 3,19-O-diacetate (12) were obtained. By DPPH and superoxide anion scavenging testings, the results indicate that compound 12, 14-deoxy- 11,12-didehydroandrographolide 3,19-O-diacetate, displaces the antioxidant activity. These analogues will be tested for other biological activities, and used as reference standards for monitoring our continuing studies on the mammalian metabolism of andrographolide.