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• 英文關鍵字	Cytochrome P450 3A4; High performance liquid chromatography; Furanocoumarin
• 中文摘要	研究指出 furanocoumarin 之化合物及其相關衍生物是葡萄柚汁造成代謝酵素 Cytochrome P450 3A4（CYP3A4）活性抑制的主要成分，並且會導致許多高危險性之藥物不良反應的發生。自然界中繖形科、豆科和芸香科的植物也發現含有 furanocoumarin 的成分。而這些繖形科、豆科和芸香科的植物其實是很廣泛的應用於我們的日常生活中，如水果或是傳統中藥之藥方。爲了預測它們與藥物之間可能發生之交互作用，第一要務便是去測定它們是否含有具抑制 CYP3A4 活性能力之 furanocoumarin 成分。在本論文中，利用逆相高效液相層析法（reversed-phase highperformance liquid chromatography，HPLC）以不同比例之水與乙?(acetonitrile)作沖提建立一個簡單、方便且快速之分析方法來分析五個已知之主要的 furanocoumarins ：bergamottin 、DHBG、bergapten、bergaptol 和 psoralen。五個成分的標準品之偵測極限（Limit of detection，LOD）與定量極限（Limit of quantification，LOQ）經計算後分別爲 0.09－0.17 ng/mL 與 31.25 ng/mL。接著利用此一經確效之分析方法進行十種台灣廣泛使用之中草藥白芷、羌活、獨活、防風、當歸、黃芩、甘草、茵陳蒿、葛根和陳皮之萃取液中 bergamottin，DHBG，bergapten，bergaptol 和 psoralen 的含量測定。測定結果顯示，除了茵陳蒿和葛根以外，進行實驗之中草藥含有不同程度含量的 furanocoumarin 成分。另外， 本論文也進行五個主要的 furanocoumarins 和上述十種中草藥之體外代謝酵素之抑制試驗，利用大鼠之肝臟酵素和模式藥物 nifedipine 來評估它們對於人體中 CYP3A4 酵素活性的影響。結果顯示五個主要的 furanocoumarins 成分皆表現出具有強力之抑制 CYP3A4 的能力。Bergamottin，DHBG，bergapten，bergaptol 和 psoralen 之 IC50 經計算分別爲 3.12，1.49，7.80，13.56 和 7.22 μM。除此之外，部分中藥萃取液亦顯示出具有強力之抑制 CYP3A4 的能力。由以上結果可知，含有 furanocoumarin 成分之生藥會造成代謝酵素 CYP3A4 活性的抑制，因此也可能會造成體內

	與藥物交互作用的發生導致藥物之不良反應。
• 英文摘要	Furanocoumarin derivatives and relative compounds are thought to be involved as the active ingredients in grapefruit juice(GFJ) which had been reported to inhibit Cytochrome P450 3A4(CYP3A4) activity and will result in high risk adverse drug reactions. Naturally, various derivatives of furanocoumarins are detectable in plants belonging to the families Umbelliferae, Leguminosae, and Rutaceae. Many of them are often used as fruits or traditional medicine and widely used in our daily lives. To predict interactions between herbal medicines and drugs, the first priority is to identify at least the major components having inhibitory effects on P450 activities. In the first year study, a reversed-phase high 3 performance liquid chromatography(HPLC) method using a gradient mobile phase system was proven to be acceptable for separation of bergamottin, DHBG, bergapten, bergaptol and psoralen. Detection and quantification limits of all analytes were calculated ranging from 0.09 to 0.17 ng/mL and to be 31.25 ng/mL, respectively. This confirmatory method then applied to detect five major furanocoumarins contained in ten Chinese herbal medicines widely used in Taiwan. Results demonstrated that this HPLC method is appropriate for applications to quantitative determination of five furanocoumarins and each of ten crude drugs we examined showed various degrees of furanocoumarins components. In additional, we investigated the ability of five furanocoumarins and ten Chinese herbal medicines to inhibit the nifedipine dehydrogenation activity of CYP3A4 was examined using rat liver microsomes. All five furanocoumarins showed strong CYP3A4 inhibitory potencies and the IC50 values were calculated to be 3.12, 1.49, 7.80, 13.56, and 7.22 .mu.M for bergamottin, DHBG, bergapten, bergaptol, and psoralen, respectively. Therefore, some of herbal extracts were shown to be potent inhibitors of CYP3A4. These results indicated that crude drugs containing furanocoumarins could inhibit CYP3A4 activity and would possibly lead to drug interactions.