臺灣產吳茱萸屬植物果實之成分研究

Phytochemical Studies on the Fruits of Formosan Evodia Genus Plants

中文摘要

吳茱萸為吳茱萸(Evodia rutaecarpa, 屬於芸香科)的未成熟乾燥果實，被收載於神農本草經中品，其記載: 吳茱萸性溫具有辛辣味，可溫身，除腹脹，止痛，止嘔，去濕，除風邪，促進血液循環，對冷熱症均好。中醫廣泛用於治療頭痛，腹痛，痢疾，產後出血和閉經等疾病。 @有關其成分研究報告指出，吳茱萸含有多種 quinazolinocarbo- line alkaloids，如 evodiamine，rutaecarpine，dehydroevo- diamine.....等。而它們分別被證實具有強心(evodiamine)，增強子宮收縮力(rutaecarpine, dehydroevodiamine)，降血壓、抗心律不整、舒張血管(dehydroevodiamine)等活性。臺灣產吳茱萸屬植物，除吳茱萸(Evodia rutaecarpa)外，尚有山刈葉(E. merrillii)，臭辣樹(E. meliaefolia)和三叉虎(E.lepta）。其果實成分均未見有過報告，本研究係對臺灣產吳茱萸屬植物果實的成分加以探討。利用各種柱層層析之方法，分別自吳茱萸(Evodiae fructus)，山刈葉(Evodia merrillii)，臭辣樹(E. meliaefolia)，及三叉虎(Evodia lepta)的乾燥果實之酒精萃取物，分離其成分。吳茱萸果實部份，得到九個化合物，計有五個生物鹼，三個類黃酮素，及一個苦味素。其中一個生物鹼推測為新化合物，而三個類黃酮素在此植物果實為首次發現。臭辣樹果實部份，共分離得到十七個化合物，分別有五個苦味素，四個生物鹼，五個類黃酮素，一個三帖類，植物固醇及長鏈脂肪醇。山刈葉果實部份，共分離得到十一個化合物，其中包含六個新的苯乙酮類化合物，四個類黃酮素，及 adenosine。三叉虎果實部份，得到六個化合物，包含三個苯乙酮類化合物，二個類黃酮素，及植物固醇。其中一個苯乙酮為新化合物。所有的化合物，利用光譜分析及化學反應或製備衍生物的方法而決定其結構，計有三十八種化合物，其中八種為天然界新發現之化合物。

英文摘要

Wu-Chu-Yu, the dried unripen fruit of Evodia rutaecarpa (i.e. Fructus Evodiae), is a commonly used Chinese medicine and well documented in Chinese medical book " Sheng Nung Pents''ao Ching ". Traditionally, Wu-Chu-Yu has been used for the treatment of headache, abdominal pains, dysentery, post- partum hemorrhage and amenorrhea. Wu-Chu-Yu contains a variety of quinazolinocarboline alkaloids including evodiamine, rutaecarpine, and dehydroevo- diamine. These compounds were found to be active in cardio- tonic(evodiamine), uterotonic(rutaecarpine and dehydro- evodiamine), vasodilative(dehydroevodiamine), hypotensive(dehydroevodiamine),and antiarrhythmic (dehydroevodiamine) actions. Since there are Evodia rutaecarpa, E. merrillii, E. meliaefolia; and E. lepta that belong to Evodia genus in Taiwan, study of the constituents of these Evodia fruits, therefore, became our interest. The alcoholic extracts of the dried unripen fruits of Evodia genus

were charged to column chromatographic metho- dology for separation and purification of its constituents. From E. Fructus, a new quinazolinocarboline alkaloids(7- hydroxyrutaecarpine) was obtained; from E. merrillii, six novel acetophenones [4-(1''- geranyloxy)- 2,6-di-hydroxy-3-isopentenylacetophenone, 2 - (1''-geranyloxy)- 4,6-dihydroxy acetophenone, 4 -(1''-geranyloxy)-2, 6-dihydroxyacetophenone, 4-(1''-geranyloxy)- 2,6,β-trihydroxyacetophenone, 4-(1''-geranyloxy)-2,6,β -trihydroxy-3-dimethylallylacetophenone, and 2-(1''-geranyloxy)-4,6,β-trihydroxyacetophenone] were isolated; from E. meliaefolia, 17 known compounds were isolated; and from E. lepta , a novel acetophenone C-glyco- side (2,4,6-trihydroxyacetophenone-3,5-di-C-glucoside) was isolated. Overall, thirty eight compounds were isolated and iden- tified from the fruits of Evodia plants in Taiwan, and eight of them were characterized as new compounds.