

## New flavonoid chemotypes from *Asplenium normale* (Aspleniaceae) in Malaysia

### ABSTRACT

Seven *Asplenium normale* individuals in Malaysia were surveyed for flavonoid compounds. They were divided into two chemotypes, H- and I-types. The flavonoids were isolated by various chromatography and identified by TLC, HPLC, UV spectroscopic, LC-MS and NMR surveys. Two flavone O-glycosides, apigenin 7-O-rhamnosyl-(1→4)-rhamnoside (1) and apigenin 7-O-rhamnosyl-(1→4)-rhamnoside-4'-O-rhamnoside (2), and two flavone C-glycosides, vicenin-2 (6) and lucenin-2 (7), were contained in one chemotype (H-type). On the other hand, two flavonol O-glycosides, kaempferol 3-O-glucosylrhamnoside (3) and kaempferol 3,4'-di-O-glycoside (4) and a flavone O-glycoside, genkwanin 4'-O-glucosyl-(1→3)-rhamnoside (5), were found from another chemotype (I-type) together with 6 and 7. In cases of Japanese *Asplenium normale* and related species, seven chemotypes have been reported. However, their chemotypes did not include flavonol O-glycosides and apigenin trirhamnoside. Apigenin 7-O-rhamnosyl-(1→4)-rhamnoside (1) and apigenin 7-O-rhamnosyl-(1→4)-rhamnoside-4'-O-rhamnoside (2) were reported in nature for the first time.