

Detection of hepatotoxic pyrrolizidine alkaloids in *Emilia sonchifolia* using liquid chromatography-electrospray ionization mass spectrometry

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Emilia sonchifolia (L.) DC. (Lilac tasselflower, yi dain hong) is a traditional herbal medicine commonly used in anti-inflammatory, detoxifying, antipyretic and anti-fever. In this study, we have investigated the hepatotoxic and tumorigenic pyrrolizidine alkaloids (PAs) contained in *E. sonchifolia*. The plant samples were collected from Taiwan for four seasons of the year. Alkaloid extracts were analyzed using liquid chromatography-electrospray ionization mass spectrometry (LC-ESI/MS) method. Quantitation of the individual PA was determined by linear regression curves with reference standards of senkirkine, senecionine and seneciphylline. Thirteen PAs of two types were identified in *E. sonchifolia* (by type): (1) Otonecine bases, otosenine, petasitenine, desacetyldoronine, neosenkirkine, adonifoline, senkirkine, crotafoline, acetylotosenine, acetylpetasitenin, doronine and acetylsenkirkine; (2) retronecine bases, seneciphylline and senecionine, among which the senkirkine figured as a major PA ranging from 0.2 to 23.9 µg/g dry herb. The total content of toxics PAs for each sample ranged from 1.3 to 31.2 µg/g dry herb that were all higher than that (>=1 µg/g herb) recommended by Belgium and Germany not to be used clinically. The samples growing in summer were detected with the highest PAs concentrations and posed significant threat to human health and medicinal safety when consuming *E. sonchifolia* for herbal treatment.

Biography

Ya-Chen Yang obtained her M.S. and PhD degrees from Department of Applied Chemistry, Providence University, Taiwan, from 1992 to 1998. Later she was recruited to study at the National Center for Toxicological Research (NCTR), Arkansas, United States for two years, from October 1998 to September 2000 as post-doctoral. She has worked experience in the fields of analytical chemistry, molecular toxicology, and cancer research. Currently she is associate professor of Health and Nutrition Biotechnology, Asia University, Taiwan.

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