Chemical and Biological Comparisons on Evodia with Two Related Species of Different Locations and Conditions

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Abstract

Evodia rutaecarpa (ER) and Tetradium glabrifolium (TG) are closely related species collected from different locations, with processed versus unprocessed and fresh versus 1-year-old samples. The purpose of this study is to determine the variability of their bioactive constituents; evodiamine, dehydroevodiamine, rutaecarpine and synephrine--as well as their relaxing effects on an isolated rat aortas and uterus using the extracts of the test specimens. The vasorelaxation was greater in ER from Taiwan than from China in spite of lower levels of the relaxing alkaloids evodiamine, dehydroevodiamine and rutaecarpine. On the other hand, the uterine relaxation of ER from China was better than the one from Taiwan, even though constricting synephrine was only contained in Chinese ER. After processing, the relaxation of ER from China in the uterus was increased while the vasorelaxation remained unchanged. Conversely, TG from Wu-ling contained more relaxing alkaloids than that from Lee Mountain. However, the relaxation in both the uterus and the aorta was less in TG from Wu-ling. After 1 year of storage, the vasorelaxation of TG from Lee Mountain was not changed. Taken together, a significant finding in the present study is the lack of correction between chemical composition and relaxing activities. This strongly supports our assumption that biological function evaluations, instead of chemical standardization, is the more adequate way of showing meaningful consistency of natural preparations.