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Osteogenic activity of constituents from Taiwan native plant

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Osteoblasts and osteoclasts are two main cells of bone remodeling. While osteoblasts play an important role in bone formation via different signaling pathways, osteoclasts are responsible for bone resorption. Osteogenesis is characterized by the presence of a number of markers like: Alkaline Phosphatase (ALP) and type-I collagen at the differentiation stage of osteoblasts, while osteopontin and osteocalcin are actively expressed during mineralization (the mature stage). *Uraria crinita* (L.) Desv. ex DC. (Fabaceae) has been used for long as an herbal medicine to treat bone dysplasia in children in Taiwan and China. In the present study, we investigated the active constituents of the root from *U. crinita* by bio-guided isolation in primary human osteoblast (HOb) cells. Cell viability was determined using the WST-8 assay. Osteogenic activity was evaluated in HOb cells using ALP assay and Alizarin red S staining for mineralization. Gene expression was analyzed using real-time PCR. The results showed that 50% ethanolic extract of *U. crinita* roots increased ALP and mineralization activities. Six compounds were purified by chromatography and identified to be as: one phenolic acid, two flavone glycosides and three isoflavones from the active ethyl acetate fraction. Compound 4 (isoflavone) exhibited significantly increasing ALP and mineralization activities in HOb cells and it also up-regulated the osteogenesis-related gene expression. It may be considered to be the potential target for enhancing osteogenic activity in the future.

Biography

Yi-Tzu Lin has completed her Master's degree in 2013 and currently pursuing PhD at Taipei Medical University, Taiwan. Her major research is isolation, identification and purification of the active compounds and investigation of their bioactivities as well as the related mechanisms.

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