

## A-2

**Isolation of six new saponins from antiosteoporotic fraction of *Dioscorea spongiosa***

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**[Introduction]** Osteoporosis is an age-related disease of the bone and is always associated with bone formation mainly by osteoblast and with bone resorption by osteoclast. Now there are few of effective drugs for osteoporosis patients in clinic, so a considerable attention has been given to find out the natural remedy for treatment. Using osteoblast-like cells UMR106, we have screened 60 extracts from 30 natural crude drugs used for treatment of deficiency of the kidney in traditional Chinese medicine. According to the theory of traditional Chinese medicine, the crude drugs with such effects could be useful for treatment of atrophic debility and rheumatism involving of bones, whose clinical symptom are similar to osteoporosis. Among them, the aqueous extract of rhizomes of *Dioscorea spongiosa* (Dioscoreaceae) showed significant stimulation of the proliferation of the osteoblast-like cell, UMR106. Phytochemical investigation was carried out to identify the active constituents.

**[Result and Discussion]** The H<sub>2</sub>O extract of rhizomes of *D. spongiosa* was found to stimulate the proliferation of osteoblast-like cell, UMR106, by 66.9% at a concentration of 400  $\mu$ g/ml. It was then chromatographed on Diaion HP-20 column to give H<sub>2</sub>O and 30%, 60% and 90% EtOH fractions, Among them, the 90% EtOH fraction showed 89.5% stimulation of the proliferation of UMR106 and 100% inhibition of the formation of osteoclast-like multinucleated cells at a concentration of 200  $\mu$ g/ml. Purification of the 90% EtOH fraction was achieved by a series of chromatographic separation and afforded six new and 14 steroidal known saponins. Their structures were determined by spectroscopic methods. The antiosteoporotic activity of these saponins was evaluated by inhibition of the formation of osteoclast-like multinucleated cells and bone resorption.