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Peony roots as a potential functional food improving bone-health

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Ageing increases the incidence of senile disorders including dementia, cardiovascular diseases, cataract and bone-related disorders. Among these diseases, bone-related disorders including fracture and osteoporosis affect adversely in the quality of life for elderly people. Therefore, natural substances which can promote bone-health (bone strength) without side effects have been searched, which could be developed as a functional food. Thus, we screened 20 natural products for promoting effects on pre-osteoblastic cell (MC3T3-E1) differentiation using Alkaline Phosphatase (ALP) assay. As a result, 80% ethanol extract of peony root (roots of *Paeonia lactiflora, Paeoniaceae*) was one of the best natural products efficiently promoting the differentiation of pre-osteoblastic cells. Then, ethanol extract of peony roots was partitioned based on solvent polarity to n-hexane, dichloromethane, ethyl acetate, butanol and water fractions; these fractions were also applied to ALP assay. Ethyl acetate fraction of peony roots most efficiently induced the differentiation of MC3T3-E1 cells. Then, in order to figure out whether paeoniflorin, one of the reference compounds included in peony roots is an active compound inducing differentiation of pre-osteoblastic cells, ALP assay was performed. The results revealed that the active compound in peony roots was not paeoniflorin. Taken together, peony roots might be beneficial for bone-health by promoting osteoblastic differentiation. Thus, the identification of active compounds other than paeoniflorin is under investigation. Furthermore, beneficial effects of peony roots on osteoporosis is also under investigation with ovariectomized *in vivo* animal model.

Biography

So-Young Park has her research focused in the field of Natural Product Chemistry and Development of Functional Food. She holds several patents of natural substances having potential as anti-Alzheimer's agents and anti-osteoporosis agents. She has worked on to discover natural products which inhibit beta-amyloid production or aggregation, and neuro-inflammation. In addition, she expanded her research interest to search natural products beneficial for osteoporosis and osteoarthritis.

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