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Assessing the gene expression role of osteoporotic MG-63 osteoblasts in the bone formation using cowpea and vitamin D

J Rishika, A Rajanna and C Suresh
National Institute of Nutrition, India

Statement of the Problem: Osteoporosis (OSP), most commonly seen in age old people and women nearing their menopause stage is considered as silent disease, because until a fracture occurs the symptoms never appear to draw attention to. In the wake of gravity of osteoporotic morbidity, phytoestrogens are gaining a lot of attention now days due to lesser side effects, high clinical benefits and estrogen mimicking activity. In present study, Cowpea (Vigna unguiculata) having rich isoflavone content along with daidzein, genestein and vitamin-D are tested on MG-63 human osteosarcoma cell line, to study the gene expression levels of bone protein markers after and before treatment.

Methodology & Theoretical Orientation: Initially MG-63 cells are exposed to positive controls daidzein (Dz) and genestein (Ge), D+G, Cowpea extract (CPIF) and vitamin-D (vit-D), C+V and C+V+D+G (all) individually and in combinations for 48 hours as per standardized cell culture techniques. Using Ec50 concentrations, the cells are further tested for expression levels of the bone specific markers namely osteonectin (SPARC), osteopontin (OPN) and receptor activator of nuclear kappa B ligand (RANK-L) using western blot analysis studies.

Findings: The gene expression levels of SPARC, OPN and RANK-L significantly increased after treatment when compared to control by western blot analysis studies.

Conclusion & Significance: Gene expression study through western blot analysis showed the stimulating effects of Cowpea isoflavones along with the vitamin D in the bone formation. Thus supplementation of the whole extract of naturally rich CPIF in the present study provides notch to commercialize cowpea in the form of capsules and tablets for the treatment of osteoporosis.

Biography

J Rishika has her expertise in handling cell culture techniques. She is well trained in techniques like HPLC, flow cytometry, western blot and PCR.

jadai.rishika@gmail.com

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