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# INHIBITORY EFFECT OF ZINC IN DIABETES WITHOSTEOPOROSIS

Muthulakshmi A[1], Nagalakshmi K[2], Hemanth G[2], Shila S[2*]
[1]Rajalakshmi Engineering College,Chennai,
[2]VRR Institute of Biomedical Science (Affiliated to University of Madras) Chennai.
[*]Corresponding Author: E-mail: vrribms@gmail.com; Ph: +91 44 2679 1700; Fax: +91 44 2436 0219

**ABSTRACT**

**Background**:Diabetes is associated with an increased risk of bone loss and fractures leading to secondary osteoporosis.Zinc, an essential trace element, can be used to inhibit osteoclast differentiation.The scope of this study is to investigate the beneficial effect of zinc on osteoclast inhibition in diabetic subjects*invitro.*

**Research design and methods:**The experiment were designed as: Group I:Normal / Healthy subjects-7, Group II: Diabetes with osteoporosis-12, Group III: Zinc treated diabetic subjects- 12.The mononuclear cells were isolated from the whole blood of diabetic subjects using Ficoll-histopaque method and were culturedin osteoclastdifferentiation medium containing RANKL and M-CSFfor 14 days and were identified by TRAP staining. Cell viability was determined by MTT assay.The expression of osteoclastic protein like NFATc1 and c-Fos were analysed by the so called immunoblot. The Innovative gene expression of Cathepsin K and calcitonin receptor were analysed by RT-PCR.

**Result**: The number of TRAP positive multinucleated osteoclast cells were significantly decreased ($p<0.01$) in zinc treated group. Western blot analysis revealedsignificant decrease($p<0.01$) in the expression of NFATc1, c-Fos in treatment group as compared to diabetic subjects.The mRNA expression ofcathepsin K and calcitonin receptor were increased significantly ($p<0.001$) in diabetic subjects when compared to zinc treated group.

**Conclusion**: These results demonstrate that zinc inhibits osteoporosis. Thus, zinc can be used as a therapeutic candidate for the prevention of bone loss in diabetic subjects.

***Key words:*** *Diabetes; Osteoclasts; Osteoporosis; Zinc*