

## Diabetic Osteopenia: The Anabolic Effect Of Zinc On Bone Metabolism

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Zinc ion may act as an anabolic agent in bone and the observation in diabetes is a loss of zinc due to increased urinary excretion. We hypothesized that zinc ion supplementation may prevent bone loss associated to the diabetes. The study was performed using blood samples from control (N=8) and diabetic male Wistar rats (180-220g) supplemented (N=11) or not (N=11) with zinc ion (ZnCO<sub>3</sub>-150mg/day) for 5-30 days after the onset of diabetes (STZ-induced T1DM model; 40mg/Kg b.wt). Calcium, phosphorous and Vitamin E were also supplemented 2.5-20 times the basal diet for rodent (AIN-93). We evaluated alkaline phosphatase, tartaric-resistant acid phosphatase, total calcium, phosphorous, magnesium, creatinine, albumin and glucose. The determinations were performed by routine Cobas Mira Plus Roche System with BioTecnica diagnostic reagents. Glucose levels increased significantly and body weight decreased markedly when compared to controls. No difference was observed in serum calcium, phosphorous, magnesium, creatinine and albumin. TRAP activity had a slight increase on day 30 for DS group (13.22±2.21U/L) when compared to D (12.5±5.96U/L) and C groups (10.78±0.95U/L). An increase of serum ALP activity of DS (616±68.56U/L), 2-4 fold, when compared to D (363.4±60.19U/L) and to C group (160.55±77.90U/L), over the 30 days, suggest the anabolic effect of zinc on bone metabolism. This hypothesis was supported by the higher and significant increase of serum ALP activity of DS group (150mg of zinc) when compared to 60mg over the 30 days. These findings could lead to the development of new protocol and drugs that maximize the health benefits of zinc supplementation to be used in the prevention and treatment of osteoporosis.