



Egyptian Journal of Veterinary Sciences

<https://ejvs.journals.ekb.eg/>



**Evaluating the Systemic Effect of Metformin on Gene Expression
of Osteocalcin and Vitamin D Receptors at Bony Defect in Rabbits**



CrossMark

Abstract

BACKGROUND: Disorders of bone healing still constitute real challenges in clinical care today.. However, the bone filling materials delivery requires surgical implantation at the site of fracture, which may result in local complications. Therefore administered osteogenic drugs will provide an excellent method for bone lesion healing. Metformin osteogenic effect through increasing osteoblasts and decreasing osteoclasts **Aim of the study:** to evaluate the systemic effect of metformin administration on bone healing at bony defect site by measuring the gene expression of osteocalcin and vitamin D receptors **Material and Methods:** Twenty mature male rabbits were used and separated into two groups, ten in each group. Under general anesthesia, the same surgical procedure was performed on all rabbits. After the femur is surgically exposed, two holes 3 mm in diameter and 3 mm depth are prepared and left empty. The study lasts for 28 days. Metformin administered orally to the rabbits in a dose of 50 mg/kg for 28 days. Animals were sacrificed at two times intervals according to their groups at 14th and 28th day after surgery according to several studies. The femur isolated, sectioned, and bone specimens taken from the site of defect, the specimen placed in phosphate buffer saline until assessed for quantitative-PCR(QPCR). **Result:** showed that there was an increase in the quantitative gene expression of both osteocalcin and vitamin D receptors in the metformin-treated group than in the control group in both study time periods. **Conclusion:** Metformin increase bone healing and regeneration at the bone defect sites and enhance the process of osteogenesis and osseointegration more than the control untreated rabbits.