



Interferon- γ plays a role in bone formation in vivo and reverses osteoporosis in ovariectomized

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Interferon γ (IFN- γ) is a cytokine produced by mesenchymal and immune cells in the bone environment. The aim of this study [1] was to get insights into the role of IFN- γ in bone remodeling. Using interferon γ receptor R1 knockout mice, the authors were able to show that mice without IFN- γ receptor R1 exhibited a 45% decrease of bone volume associated with significant changes in cortical and trabecular structural parameters. These specific changes are characteristic of the osteoporotic phenotype.

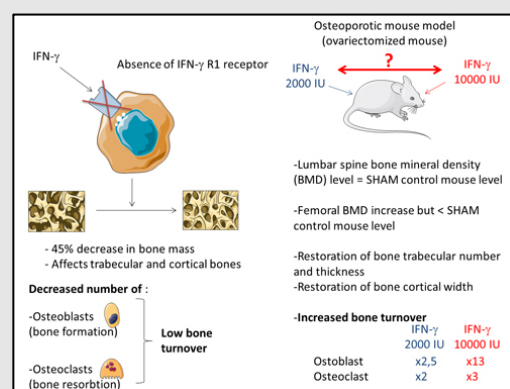
Further histomorphometric analyses showed a decrease on both osteoblast and osteoclast numbers associated with a defect of bone formation showing a low bone turnover pattern. Using ovariectomized (OVX) mice as an osteoporotic model, the authors showed that administration of IFN- γ to control and OVX mice significantly improved bone mass, architecture, and bone mechanical properties. Bone turnover was increased in control mice and rescued osteoporosis in OVX mice.

This study highlights the role of IFN- γ in the bone turnover mechanism and its potential importance in the future treatment of osteoporosis.

1. Duque G, et al. *J Bone Miner Res.* 2011;26:1472-1483

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Homozygote mice deleted for interferon- γ receptor have been used to evaluate the role of IFN- γ in normal bone remodeling. The resulting mice are normal at birth but show a 45% decrease of bone mass, a decrease of bone mineral density in trabecular and cortical bones, and a decrease of osteoblast and osteoclast differentiation, showing a defect in bone turnover. Injection of IFN- γ to ovariectomized mice restored bone mineral density (BMD) at the lumbar spine; increased BMD at the femoral level, restored trabecular and cortical bone quality, and increased osteoclast and osteoblast number in a dose-dependent manner, allowing better bone turnover.



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