

THE EFFECTS OF REGULAR TANNING BED USE AND INCREASED VITAMIN D
STATUS ON BONE MINERAL DENSITY AND SERUM INFLAMMATORY
MARKERS IN HEALTHY WOMEN

Mary Heffernan

Dr. Catherine Peterson, Thesis Supervisor

ABSTRACT

Vitamin D is synthesized in the skin in response to UVB radiation and has an essential function in optimal bone health. Recent evidence has also implicated a role for vitamin D in a properly functioning immune system. The objective of this study was to determine the relationship between vitamin D status, inflammatory markers, and bone mineral density in healthy pre- and post-menopausal women who regularly use tanning beds. This observational study examined 69 healthy female subjects: 49 Tanners and 20 Non-Tanners. Subjects provided medical and dietary information, a blood specimen, and bone mineral density was measured. Blood specimens were analyzed for serum 25(OH)D, parathyroid hormone (iPTH), estradiol (E₂), cortisol, and inflammatory markers. **Results:** Tanners had serum 25(OH)D concentrations that were significantly higher ($P < 0.0001$) and iPTH concentrations that were significantly lower ($P < 0.0001$) than Non-Tanners. There were no differences in bone density between groups. Tanners had significantly lower serum TNF α ($P < 0.0200$) and a linear regression revealed that 25(OH)D had a significant inverse relationship with TNF α ($P < 0.0463$), which remained significant after controlling for potential covariates. **Conclusions:** Serum 25(OH)D status is inversely related to TNF α concentrations in healthy women, which may in part explain its role in the prevention and treatment of numerous diseases.