

# Stand Tall: The Impact of Tocotrienols on Bone Health

Bone tissue is dynamic and constantly being remodeled in a balanced cycle of bone loss and bone formation. Bone diseases arise when this cycle goes out of flux and tips in favour of bone loss and inflammation.

## How do Tocotrienols Maintain Bone Health?

In bone disease like osteoporosis, oxidative stress and inflammation lead to increased activity of osteoclast cells that promote bone tissue degradation. Pre-clinical studies have shown that tocotrienol supplementation reduces the amounts of oxidative stress in bone tissue, as evidenced by a reduced amount of bone lipid peroxidation marker (Figure 1) and increased amounts of antioxidative enzyme activity (Figure 2).

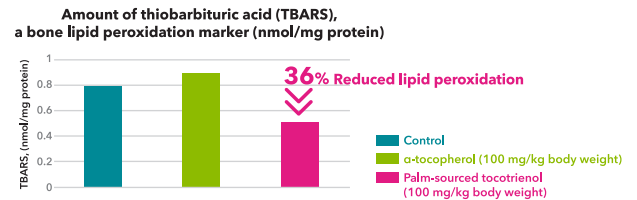


Figure 1: Impact of palm tocotrienol supplementation on lipid peroxidation in the femur of adult rats (Maniam et al., 2008).

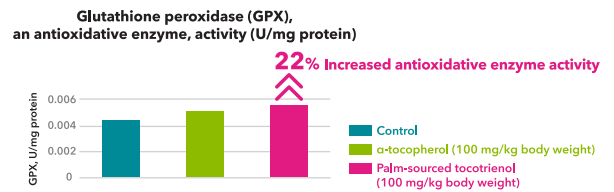


Figure 2: Impact of palm tocotrienol supplementation on antioxidative enzyme activity in the femur of adult rats (Maniam et al., 2008).

In menopause, oestrogen levels drop which leads to an increase in the amounts of pro-inflammatory cytokines like interleukin-1 (IL-1) and interleukin-6 (IL-6) in the body. This leads to low-grade chronic inflammation that further drives osteoclast cell-mediated bone tissue degradation. Pre-clinical studies have found that tocotrienol supplementation is able to prevent this rise in cytokines (Figures 3 and 4).

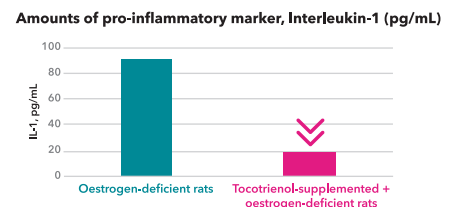


Figure 3: Amounts of interleukin-1 (IL-1) (Muhammad et al., 2013).

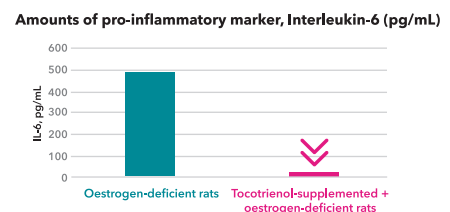


Figure 4: Amounts of interleukin-6 (IL-6) (Muhammad et al., 2013).

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