

## Antioxidant effects of rosemary (*Rosmarinus officinalis* L.) extract on bone metabolism in rats

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For centuries, various herbs have been used to cure many diseases because they have numerous antioxidant,<sup>(1)</sup> anti-inflammatory and antibacterial properties, and some even promote anti-proliferation activities against several human cancer cell lines<sup>(2)</sup>. Rosemary (*Rosmarinus officinalis* L.) extract is a natural antioxidant and has a high concentration of biologically active substance such as phenols, caffeoyl, and flavones<sup>(3)</sup>. The present study investigates the effects of rosemary (*Rosmarinus officinalis* L.) leaf extract on the bone metabolism of rats.

Adult Wistar rats (n = 18) were assigned to one of three treatment groups. Group A served as a control, group B was treated with cold aqueous extract 1.3 ml oral gavages once a day, and group C was treated with hot aqueous extract 1.3 ml oral gavages once a day. The rats were treated for thirty days. The total antioxidant power and alkaline phosphatase enzyme were measured in the plasma at the end of the experiment. Then, the rats were euthanized, and bone (femur) was removed promptly and analyzed for calcium and phosphorous. The results showed that the oral gavages of rosemary extract increased the levels of total antioxidants and alkaline phosphatase in the treated groups (data not shown).

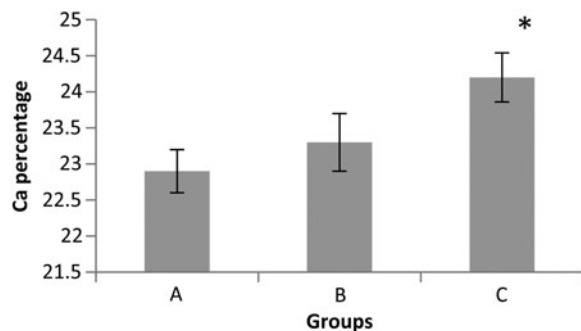


Fig. 1. Calcium percentage in left femur

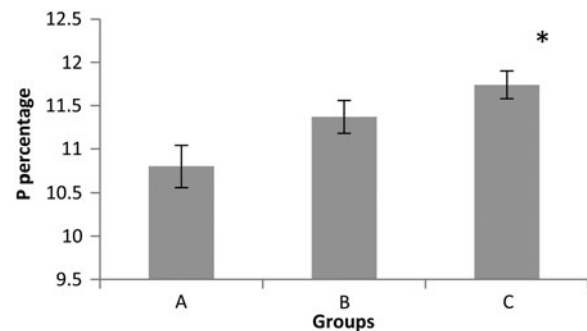


Fig. 2. Phosphorous percentage in left femur

Post hoc analysis showed that significant increase in group C compared with group A (Fig. 1,  $P < 0.049$ ) (Fig. 2,  $P < 0.016$ ). The results of the present study indicate that rosemary improves bone metabolism.

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