

Curcumin Favors Bone Mineralization, Mitigates Lipid Peroxidation, but Causes Anemia in Normal and Castrated Rats

Oluwakemi Deborah Ayodele¹, Wale Johnson Adeyemi^{2*}, Ayodeji Johnson Ajibare³,
Luqman Aribidesi Olayaki¹

¹Physiology Department, University of Ilorin, Ilorin, Nigeria

²Physiology Department, Redeemer's University, Ede, Nigeria

³Physiology Department, Ekiti State University, Ado-Ekiti, Nigeria

Abstract

Background: Castration compromises the integrity of the skeletal and antioxidant systems. Contrarily, curcumin favors bone mineralization and antioxidant/pro-oxidant balance.

Aim: To investigate the effects of curcumin on selected biomarkers in normal and castrated rats.

Study Design: Animal experimentation.

Methods: Forty rats (N=10) were divided into the following groups, *viz*: Control (Sham castrated); Castrated (Cast); Sham Cast + Curcumin (Curcm); and Cast + Curcm. Treatments with olive oil (Vehicle) (1 ml/kg BW, *p.o.*) and curcumin (100 mg/kg BW, *p.o.*) commenced 7 days after orchidectomy and lasted for six weeks.

Results: The orchidectomized rats had

significant elevations in c-terminal telopeptide of type 1 collagen (CTX-1) and total alkaline phosphatase (TALP), but significant reductions in superoxide dismutase, testosterone and packed cell volume, relative to the control group. Compared to the later, curcumin caused significant increases in estrogen, osteocalcin and parathyroid hormone in the sham castrated rats. Although the dietary supplement was observed to have no significant effect on TALP, catalase and superoxide dismutase activities in both normal and castrated states, it significantly reduced malondialdehyde, tartrate resistance acid phosphatase and CTX-1 after castration. However, curcumin precipitated anemia and increased white blood cell count in the control and castrated rats.

Address for correspondence: Wale Johnson Adeyemi* Physiology Department, Redeemer's University, Ede, Nigeria E-mail: adeyemiwalej@gmail.com

Conclusion: Curcumin favored bone mineralization and mitigated lipid peroxidation in physiological and castrated states; however, it caused anemia.

Keywords: castration; rats; curcumin; bone; antioxidant; blood