Piper sarmentosum Improves Bone Structure and Biomechanical Strength of Rats Given Excess Glucocorticoid

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Authors’ contributions

This work was carried out in collaboration between all authors. SIN edited the manuscript MRE3 designed the study, wrote the first draft of the manuscript and answered the reviewer’s comments. MAHF and MSF performed the research work, the statistical analysis, wrote the protocol, and contributed the first draft of the manuscript. AF and HSF managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To determine the effect of Piper sarmentosum (Ps) leaf extract on biomechanical strength and trabecular structure of the bones of glucocorticoid-induced osteoporotic rats.

Study Design: Administration of crude extract to rats with excessive glucocorticoids.

Place and Duration of Study: Department of Anatomy and Pharmacology, National University of Malaysia, between September 2010 and December 2011.

Methodology: Three-month-old male Sprague-Dawley rats were adrenalecetomized to remove the main source of circulating glucocorticoids. The animals were replaced with dexamethasone 120 mcg/kg body weight/day. Treatment with P. sarmentosum 125 mcg/kg body weight and glycerophosphate acid (GCA) 120 mcg/kg body weight were given simultaneously for 2 months. After being sacrificed, a three-point bending configuration test for assessing the biomechanical properties of the right femoral bones was done using an Instron Universal testing machine equipped with Instron Bluehill software. The left undecalcified femoral bones were embedded in resin, sectioned, and stained with Von Kossa.

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