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Effects of black rice (*Oryza sativa L.*) aleurone layer extract on bone mineral density and bone-related markers of ovariectomized rats

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Black rice (*Oryza sativa L.*) contains functional compounds, including anthocyanins. In a previous study, black rice increased bone mineral density and strength in ovariectomized rats although its biological effects on bone-related markers has not been evaluated. The aleurone layer of black rice is a good source of anthocyanins. This study was designed to evaluate whether the aleurone layer of black rice (BRA) can effectively improve bone health in ovariectomized rats at low doses compared to whole black rice. Eight-week-old female sham-operated or ovariectomized Sprague-Dawley rats were used in this study. Serum alkaline phosphatase (AP) activity was measured by colorimetry using commercialized kits. Enzyme-linked immunosorbent assay kits were used for the determination of the following: serum calcium, parathyroid hormone, calcitonin, osteocalcin, urinary pyridinoline, urinary hydroxyproline, and urinary deoxypyridinoline. BMD and BMC were measured by X-ray densitometer for small animals and the breaking force was measured by texture analysis system. Mineral density and bone length of tibia were significantly higher in ovariectomized rats treated with BRA at 90 mg/kg body weight compared with the control (Cont) group, ovariectomized rats not treated with BRA. The breaking force of tibia and femur, and serum and bone calcium concentrations were higher in the BRA30 and BRA90 groups than those of Cont. However, serum alkaline phosphatase activity and parathyroid hormone concentration decreased in the BRA groups compared to the Cont group. The results suggest that BRA is a useful source to improve bone health by modulating bone metabolism.

Biography

Sunghyen Lee has completed her PhD at the age of 34 years from Seoul National University and postdoctoral studies from ARS-USDA. She is the senior scientist of RDA, a national research institute in Korea. She has published more than 125 papers in reputed journals and has been serving as an editorial board member of many nutrition and immunology societies.

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