Mushroom Research Abstract
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The effects of portabella mushrooms on bone mineral density and body composition in mice without and with collagen induced arthritis.

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Certain exotic mushrooms contain beta-glucan that has been shown to modulate immunity and provide health benefits. However, little information is available on the health benefits of portabella mushrooms (PM). The objective of the study was to assess the effects of PM on indices of nutritional status in mice without and with collagen-induced arthritis (CIA). Eight-week old, DBA female mice were fed either the AIN76 (baseline) diet or the same diet fortified with 5% lyophilized PM (20/group) for 6 weeks. To induce CIA, 50% of mice received 100 ug bovine collagen type II intradermally followed by 50 ug LPS 20 days later. Lean and fat mass, bone mineral density, and various organ weights were assessed by standard techniques 10 days after LPS injection. Between 90-100% of mice that received collagen developed mild-moderate paw swelling. In PM and baseline fed mice, CIA reduced body weight and thymus weights by 13%-47%, doubled spleen weights, and increased relative weights of heart, liver, and kidney by 20-24.5% for PM and 22-28% for baseline diet ($p < 0.05$). Non-CIA and CIA mice fed PM diet had higher percent of body fat (32.6% & 25.8%) than those fed baseline diet (25% & 21.9%) ($p < 0.05$). Compared to baseline diet, PM attenuated thymus atrophy (13% vs 47%) and loss of lean mass (10% vs 17%) after CIA induction ($p<0.05$). PM slightly (4-5%) increased bone mineral content but not bone mineral density in CIA and non-CIA mice. Data suggest that PM increase the percent of body fat which may attenuate muscle protein loss and minimize thymus atrophy hence T cell numbers in rheumatoid arthritis. Supp.: Grant # 580790706 Mushroom Council/USDA/NutriCore & funds from Oklahoma State University.