

Mushroom Research Abstract
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The effects of whole mushrooms during inflammation

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Consumption of edible mushrooms has been suggested to improve health. A number of isolated mushroom constituents can also modulate immunity. Five commonly consumed edible mushrooms were tested to determine whether they stimulate the immune system *in vitro* and *in vivo*. White button (WB) extracts readily stimulated macrophage production of TNF- α . Crimini, maitake, oyster and shiitake extracts also stimulated TNF- α production but the levels were lower than WB. Primary cultures of murine macrophage and ovalbumin (OVA) specific T cells showed that whole mushroom extracts alone did not affect cytokine production but co-stimulation with either lipopolysaccharide or OVA (respectively) induced TNF- α , IFN- γ , and IL-1 β while decreasing IL-10. WB-fed mice (2%; 4 weeks) showed no effect on *ex vivo* immune responsiveness or associated toxicity (pathology of liver, kidney and gastrointestinal tract). Mice fed 1% WB and stimulated with dextran sodium sulfate (DSS) were protected from DSS-induced weight loss. In addition, 2% WB feeding protected mice from transient DSS- induced colonic injury. The TNF- α response in the colon and serum of the DSS challenged and 2% WB fed mice was higher than controls. Data support a model whereby edible mushrooms regulate immunity *in vitro*. *In vivo* effects of edible mushrooms required a DSS challenge to detect TNF- α changes and transient protection from colonic injury. There were modest effects of *in vivo* consumption of edible mushrooms on induced inflammatory responses. The result is not surprising since it certainly would be harmful to strongly induce or suppress immune function following ingestion of a commonly consumed food.