

Inhibitory Effects of Edible and Medicinal Mushroom Extracts on Mouse Type IV Allergy

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The inhibitory effects of edible mushroom extract from *Hypsizygus marmoreus* (Peck) Bigel. (bunashimeji) and *Flammulina velutipes* (Curt.: Fr.) P. Karst. (enokitake) on oxazolone-induced type IV allergy in male ICR mice were investigated.

The determination of the type IV allergic response was identified as follows. A 0.1-ml portion of 0.5% oxazolone solution was applied to abdominal mouse skin (sensitization). Five days after the sensitization, 20 μ l of 0.5% oxazolone solution was applied to both sides of the mouse's right ear (challenge). Twenty-four hours after the challenge, mice were killed under ether anesthesia, and circular parts (5.0 mm in diameter) of both ears of mice were removed using a punching apparatus. The antiallergic effect was evaluated by comparison of the weights of the right ear and left ear parts.

In oral administration of the ethanol extracts of *Hypsizygus marmoreus* or *Flammulina velutipes* for 3 days before the challenge, both

extracts showed significant antiallergic effects at a dose of 250 mg/kg-body wt/day. However, the oral administration of the extracts for 3 days before the sensitization did not cause antiallergic effect at a dose of 250 mg/kg-body wt/day. A single subcutaneous administration of the mushroom extracts at the challenge also resulted in significant antiallergic effects at a dose of 0.10 mg/era. The mechanism for the inhibitory effect of the mushroom extracts is not clear because of the complexity of the type IV allergic response. Some natural antioxidants have been reported to prevent inflammation in type IV allergy. We have found an increase of antioxidant activity in high molecular weight fractions of blood plasma from mice fed with a diet containing 5–10% of the dried powder of the mushroom extracts. Although further investigations are necessary to clarify the mechanism, the antioxidant derived in plasma might partly contribute to the antiallergic effects of the mushroom extracts in mice with oxazolone-induced allergy.