

## Preparation and Utilization of a New Tasty Functional Low-Salt Miso Using *Neurospora intermedia*

Masako Matsuo

Faculty of Home Economics, Gifu Women's University

### Summary

Miso, a traditional Japanese seasoning, has contributed to good nutrition and health for several centuries in Japan. However, the consumption of miso in Japan is currently decreasing due to the popularization of western food. To counter this drop in miso consumption, last year the author prepared a new 4% salt miso-like fermented seasoning (called *O-miso-like seasoning*) using soybeans fermented with *Neurospora intermedia*, and found its antioxidant and antimutagen activities were higher than those of 4% salt miso-like fermented seasoning using unfermented soybeans. The long life of miso is assured by its high salt concentration, and so *O-miso-like seasoning* could not be served as long as miso. Miso has been customarily used as a seasoning for many kinds of Japanese cooking. *O-miso-like seasoning*, however, can not gain popularity over miso in a short time. In this study, another low salt miso (*O-miso*, 6% salt) was prepared using soybeans fermented with *Neurospora intermedia*. The taste and its functions as an antimutagen, antioxidant and suppressor of serum cholesterol were then compared with those of 6% salt miso prepared with unfermented soybeans (*S-miso*).

The seventy-percent ethanol extract of *O-miso* strongly exhibited higher 1,1-diphenyl-2-picryl-hydrazyl radical scavenging, superoxide anion scavenging and antimutagenicity than *S-miso*. *O-miso* contained much more isoflavone aglycones than *S-miso*, and these activities of antioxidant and antimutagen of *O-miso* may be attributed to the Isoflavone aglycones it contains. These radical scavenging activities of *O-miso* were not changed by heating, and cooking did not affect the antioxidant activity. In rats fed *O-miso*, the serum thiobarbituric acid value was lower, and serum activities of glutathione peroxidase, superoxide anion dismutase, and hepatic catalase were higher than in rats fed *S-miso*. Certainly, *O-miso* had a stronger antioxidant activity *in vivo* due to stronger scavenging activities of active oxygen. Furthermore, the serum sterol level was lower, fecal sterol excretion was significantly larger, while production of short chain fatty acids in the cecum were lower than in rats fed a *S-miso* diet. *O-Miso* had a stronger serum cholesterol-reducing action than *S-miso* due to the acceleration of fecal sterol excretion. Moreover, dishes such as mayonnaise, dressing, pottage and steamed sweet bun used *O-miso* were all found to be delicious. Based on these results, *O-miso* would have better health effects than *S-miso*, and could be increasingly used for many kinds of food preparation.