Mushroom extract shows promise for meat preservatives

Author: Cojocari Angela
Long. cons.: L. Pămădeală

This article presents the information on the mushroom extract that shows promise for meat preservatives and the research activities in this domain

Flammulina velutipes is one of the few mushrooms that can be found in winter and it is known as the "Velvet Foot". Cap 2-10cm across, convex at first and then flattened, tan-yellow darkening towards the centre, smooth and slimmy. Stem has to 30-10*4-8mm. It is tough and cartiginous, yellowish at apex, dark brown and densely velvety below. Flammulina velutipes has a flesh, concolorous thin and pleasant smell and taste. Gills are pale yellow. Habitat in clusters are on decaying deciduous trees, especially elm. The season is in the late autumn to spring and it can survive being frozen solid and on the thawing producing more spores. This mushroom is often sold in a cultivated form as Enokitake, the reason that it does not resemble the wild form where it is grown entirely in the dark [1].

An extract from the edible mushroom Flammulina velutipes may prolong the shelf-life of tuna meat, while also stabilizing the colour of the meat, suggests the new research from Japan. Fungi extracts would extend shelf-life by up to six days during cold storage, compared to untreated meat, according to the results published in Food Science Journal.

The oxidation processes in food can lead to the organoleptic deterioration in taste, colour and texture. Fish products are particularly susceptible to oxidation processes because of the high unsaturated lipid content [2]. The food industry has long been aware of that and increases seeking the natural solutions rather than the artificial additives, such as: butylhydroxyanisole(BHA) and butylhydroxytoluene (BHT), to extend the shelf life of mildew-tasting products. The researchers reported that extracts from the same mushroom could prevent browning of tuna and beef meat when the mushroom extract was used as an additive.

The researchers, led by Huynh Bao, formulated four preparations of the minced tuna meat, containing 1, 3 or 5 millilitres of mushroom extract per 100 grams of meat. A dose-dependent response was observed, with the tuna-meat's shelf-life under ice storage being increased by 2, 4 and 6 days, respectively, compared to the meat without the extract [3; 5].

Furthermore, five milliliters of the mushroom extract was found to be more effective than addition of vitamin C at a level of 500 ppm or vitamin E at the same levels. Beneficial effects on the colour of the meat were also identified, and linked to the level of lipid oxidation and the formation of metmyoglobin in the fish meat.

"Flammulina velutipes, a traditional edible mushroom, has been used as a culinary vegetable without any known toxic effects. This study clearly showed that the hydrophilic extract prepared from Flammulina velutipes was a promising source of natural antioxidants for food and food stuffs" wrote the researchers. Commenting on the formulation quantities, the researchers did add that at a dose of five milliliters per 100grams of meat, this would scale up to 50 milliliters, prepared from 500grams of mushroom, and would be needed for one kilogram of meat. This amount of the extract seems not small for further practical application in the food industry. The researchers have already found similar suppressing effects of a hydrophilic extract prepared from the mushroom cultured matter which has been mainly discarded or merely used as fertilizer of low-cost performance so far [3; 6].

In conclusion I can mention that the value-added utilization of the waste cultured matter of Flammulina velutipes for the preparation of functional extract would be more valuable than the use of edible fruiting body in terms of not only economic aspects but also environment-friendly solution of the industrial waste treatment.

Bibliography:

1. Ikeda I., *Studies on mushroom Flammulina velutipes*, 1982, p.128.
2. Methven A., *Flammulina RFLP patterns identify species*, 2000.
3. H.N.D Bao, H.Ushio, *Antioxidative activities of mushroom extract added to bigeye tuna meat. Dose-dependent efficacy and comparison with other biological antioxidants*, Food Science Journal, 2009, p.6.