A Developing Mushroom-based Stock Cubes as a Safe Alternative to Replace MSG in Food Flavouring

[*]W.M.W.W. Kandegama[1,2], K.H. Maduwanthi[1], J.M.G.M.T. Karunarathne[2,3], E.K.W.W Weerarathna [2] and M.A.N. Nimasha [4]

[1] Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka

[2] National Key Laboratory of Green Pesticide, Key Laboratory of Green Pesticide and Agricultural Bioengineering, Ministry of Education, Center for Research and Development of Fine Chemicals, Guizhou University, China

[3]College of Agriculture, Guizhou University, China

[4]Faculty of Indigenous Medicine, Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka

[*] wishwajith@wyb.ac.lk

Artificial food flavouring agents such as mono sodium glutamate (MSG) containing stock cubes are commonly consumed worldwide; however, this may lead to non-communicable diseases that threaten human health. A natural substitute for stock cubes has not yet been identified, presenting a great potential to produce a natural food-flavouring cube from oyster mushrooms. This study aimed to introduce a food-flavoured spice cube from oyster mushrooms. Spiced cubes were developed with four formulations, T1: 25% Corn flour (CF)+75% Stock cube mixture (SCM); T2: 30% CF+70% SCM, T3; 35% CF+65% SCM, T4; 40% CF+60% SCM, and commercial stock cube was the control (C). 350 g of prepared chicken extract, 20 g of oyster mushroom powder, 110 g of corn flour (binding agent), and 4 g of prepared spices mixture were used for the solid stock cube mixture. Arranged in a completely randomized design (CRD) and analysed using the Friedman test using SAS statistical package. According to the seven-point hedonic scale for sensory evaluation, C and T4 showed the highest organoleptic properties. Therefore, T4 was used for further analysis: proximate analysis; T4 showed significantly higher ($p<0.05$) carbohydrate content (44.36 ±0.70%) and energy (333 Kcal/100 g) compared to the C (14.20±0.45% and 268.6 Kcal/100 g, respectively), significantly lower crude protein content (8.46 ±0.20%) compared to C (9.50±0.26%), lower ash (6.40%±0.26) and fat contents (6.36%±0.25) compared to C (45.40±0.45% and 26.46±0.20%, respectively). The total antioxidant capacity (TAC) tested using ferric ion reducing antioxidant power (FRAP) assay, C (0.57 mg TE/g DW) was significantly ($p<0.05$) higher than T4 (0.44 mg TE/g DW). These results proved the potential of oyster mushroom spiced cubes to promote as a healthier alternative to commercial stock cubes because they contain natural spice flavour and are free from MSG.

Keywords: Healthy food, Monosodium glutamate, Oyster mushroom, Stock cube, Spice