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Optimization of parameters for production of protein hydrolysate using edible oyster mushroom (*Pleurotus ostreatus*)

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Bioactive peptides which are specific protein fragments serve for both nutritional and medicinal purposes. These are inactive within the sequence of parent protein and release during food processing. The present research study aims on the production and utilization of bioactive peptides from protein rich natural sources which is of immense scientific interest over the past few years. In this particular study, we have tried to optimize the parameters for the superior quality peptide production for better utilization in human body. Edible oyster mushroom (*Pleurotus ostreatus*) has been selected (obtained from Vivekananda Institute of Technology, Nimpith, West Bengal) for peptide production. Primarily Protein hydrolysate was prepared enzymatically. Hydrolysis have been performed using three different enzymes (Protease k, Pepsin, Trypsin) at three different concentrations (0.05%, 0.1% and 0.15%) at three different temperatures (room temperature, 40°C, and 50°C) with three different time periods (60, 90 and 120 minutes) respectively. Enzyme inactivation has been done by keeping the hydrolysate in boiling water bath for 3 minutes. Degree of hydrolysis (TNBS method) ranged from 55.03% to 103.14%. Protein solubility and Protein dispersibility index (PDI) of mushroom protein hydrolysates varied from 3.26% to 4.15% & 68.12% to 79% respectively. According to the results, 'Protease k' has optimal activity of production of protein hydrolysate with the highest degree of hydrolysis at 50- 60°C. Thus, these hydrolysates can be formulated in diets for the betterment of protein utilization in human body and further processed for peptide production. The Spent mushroom will be processed for bioethanol production and bioremediation simultaneously.

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