

## III6. Health Microbiology and Biotechnology

### 256. Production of a protein hydrolysate of *Pleurotus ostreatus* mushroom

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Fast demographic growth has led to a growing interest in low-cost alternative protein sources to meet demands. Consequently, the attention of many researchers has focused on finding under- exploited sources of proteins, alternatives to those of animal origin, usually plant proteins have been used for this purpose. However, fungal proteins can be of a higher quality than those from many plants and may have certain economic advantages. Edible mushrooms can be processed to obtain protein concentrates, isolates or hydrolysates with improved functional properties, these in turn can be used in the formulation of functional foods or dietary supplements giving them an added value. The aim of this work was to determine the optimal conditions to obtain a protein concentrate from *Pleurotus ostreatus* mushroom powder: pH of extraction, precipitation, flour-solvent (1:5, 1:10, 1:20 w/v) ratio and amount of extractions, and then hydrolyze it with papain to obtain an extensive protein hydrolysate (degree of hydrolysis 10%).

It was found that at low pH protein solubility is lower than at high pH, reaching its minimum point of solubility at pH 4 (32 ppm), which is considered the isoelectric point. The maximum point of solubility was reached at pH 12 (502 ppm).

A positive linear correlation was found that by increasing the proportion of solvent, a greater amount of protein is solubilized (5.3, 8.1 and 9.6 mg/ml respectively), and the yield is higher. As for necessary times of extraction, it was determined that the amount of soluble protein decrease significantly with each extraction (from 6.3 to 0.9 mg/ml). In a second extraction it was obtained a significant amount of protein (2.1 mg/ml).

It was obtained a mushroom protein hydrolysate with hydrolysis degree of 24.6%. Regarding to its proximate composition compared with the unprocessed mushroom powder it can be noted that the lipid content increases almost fourfold (from 1.85 to 7.13), this may be due to a binding mechanism between protein and lipids. On the other hand, protein content is almost doubled (from 32.18 to 56.99), carbohydrate content decreases almost by half (from 50.47 to 25.95) and fiber is practically removed.