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AQUEOUS EXTRACTS FROM MYCELIUM AND FRUITING BODIES OF THE EDIBLE
MUSHROOM PLEUROTUS SPP
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Introduction.
Although fungi have been valued throughout the world as both food and medicine for thousands of years, their role in human civilisation is expanding every day. Mushrooms are promising sources of physiologically functional food and as materials for the development of pharmaceutical products, dietary supplements, cosmetics, etc [1]. Known and new techniques and conditions are used in the cultivation of mushrooms, such as the submerged cultures for the propagation of mycelia in liquid media [2] and solid state fermentation (SSF) to harvest the fruiting bodies [3]. This study involved the obtainment and partial characterization of aqueous extracts from mycelium prepared in liquid culture and fruiting bodies of Pleurotus spp.

Material and methods.
Mycelial biomass of Pleurotus spp. (P-184) was obtained by submerged cultivation on YPG medium. Mushroom mycelium was extracted for 10 h with boiling water. Fruiting bodies of Pleurotus spp grown by solid state fermentation on a mixture of coffee pulp and coconut shell were harvested and extracted for 10 h with boiling- and cold- water.
The sugar and protein contents were determined by the phenol-sulphuric method [4] and by Lowry’s method [5], respectively.

Results and Discussion.
Dry weight of extracts from mycelium and fruiting bodies of Pleurotus spp are shown in table 1.

Table 1. Dry weight of aqueous extracts from mycelium and fruiting bodies of Pleurotus spp

<table>
<thead>
<tr>
<th>Aqueous extracts</th>
<th>Dry weight (g/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mycelium extract (submerged cultures)</td>
<td>2.4</td>
</tr>
<tr>
<td>Fruiting-bodies hot extract (FES)</td>
<td>5.2</td>
</tr>
<tr>
<td>Fruiting-bodies cold extract (FES)</td>
<td>1.5</td>
</tr>
</tbody>
</table>

The highest yield was observed in the fruiting bodies hot extract. Submerged cultures led to a decrease in the protein content and to a considerable increase of carbohydrates in extracts, which was approximately five times higher (figure1). Submerged cultivation of mushrooms mycelium is a promising method which can be used in novel biotechnological processes for obtaining pharmaceutical substances of anticancer, antiviral, immunomodulating and antiscerotic action from fungal biomass, and also for the production of liquid spawn [2].

Figure 1. Content of proteins and carbohydrates on aqueous extracts from mycelium and fruiting bodies of Pleurotus spp.
The differences in the content of these biomolecules were lower for hot- and cold water- fruiting bodies extracts. The quantity of proteins was higher in the cold- water extract, a logical result taken into account the gentle conditions of processing. In hot- water extracts proteins were denatured, which favours the isolation and further purification of heat stable substances like glucans.

Conclusion.
Aqueous extracts obtained from the mycelium and fruiting bodies of Pleurotus spp represent an attractive biotechnological approach with potential applications for developing functional foods and for the further purification of valuable metabolites. The flexibility in the extraction conditions favours the dominance of proteins and/or carbohydrates in the extracts. These conditions can be optimized in order to increase the yields.

References