

Potential applications of the white rot fungus *Pleurotus* in bioregenerative life support systems

N.S. Manukovsky (1), V.S. Kovalev (1), Ch. Yu (2), Yu.L. Gurevich (1), H. Liu (2)

(1) Institute of Biophysics (Russian Academy of Sciences, Siberian Branch), Krasnoyarsk, Russia (makobios@ibp.ru)

(2) Beihang University, Department of Environment Engineering, Beijing, China (LH64@buaa.edu.cn)

Earlier we demonstrated the possibility of using soil-like substrate (SLS) for plant cultivation in bioregenerative life support systems (BLSS). We suggest dividing the process of SLS bioregeneration at BLSS conditions into two stages. At the first stage, plant residues should be used for growing of white rot fungus (*Pleurotus ostreatus*, *Pleurotus florida* etc.). The fruit bodies could be used as food. Spent mushroom compost is carried in SLS and treated by microorganisms and worms at the second stage. The possibility of extension of human food ration is only one of the reasons for realization of the suggested two-stage SLS regeneration scheme (people's daily consumption of mushrooms is limited to 200 -250 g of wet weight or 20 -25 g of dry weight). Multiple tests showed: what is more important is that inclusion of mushrooms into the system cycle scheme contributes (through various mechanisms) to the more stable functioning of vegetative cenosis in general. Taking into account the given experimental data, we determined the scheme of mushroom module material balance. The technological peculiarities of mushroom cultivation at BLSS conditions are being discussed.