FRACTAL DIMENSION AND BIOCHEMICAL ANALYSIS OF THE COLONY OF *PLEUROTUS OSTREATUS* GROWN ON DI (2-ETHYLHEXYL) PHTHALATE

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Introduction. *Pleurotus ostreatus* is a fungus able to degrade lignocellulosic substrates[1], It has been reported that these fungi are able to grown on phthalates[2]. Di (2-ethylhexyl) phthalate (DEHP) is a xenobiotic compound that provides flexibility and malleability to the plastics[3]. Filamentous fungi grown on toxic substrates present colonies with irregular borders. This irregularity has been measured using tools such as the fractal dimension (Fd)[4]. In this work enzymatic activities of several enzymes, content of glucans and glycogen, and Fd were evaluated in culture medium

Methods. *P. ostreatus* ATCC26 was grown on Petri dishes for 10 days in 4 different culture media containing mineral salts (MS) (mg/l): 1) MS (without DEHP), 2) MS + 10 of glucose, 3) MS + 500 of DEHP and 4) MS + 1000 of DEHP. Content of glycogen and glucans, different enzymatic activities[5] and Fd using (Image J 1.43u) [4] were evaluated in all the culture media.

Results. *P. ostreatus* ATCC26 had the similar content of glycogen, glucans and proteases activity in MS + glucose and in 1000 mg/l of DEHP. The highest enzymatic activity of glucanases and chitinases was shown in 1000 mg/l of DEHP. The highest laccases activity was shown in 500 mg/l of DEHP (**Table 1**). The lowest Fd was observed at 72 h of growth in 1000 mg/l of DEHP (**Figs. 1,2)**.

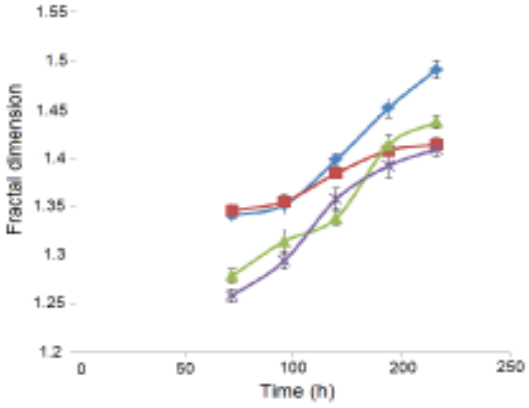

Fig. 1 Fractal dimension in media containing SM ( ),MS+Gluc ( ), MS+500 mg/L DEHP ( ) and MS+1000 mg/L DEHP ( ).

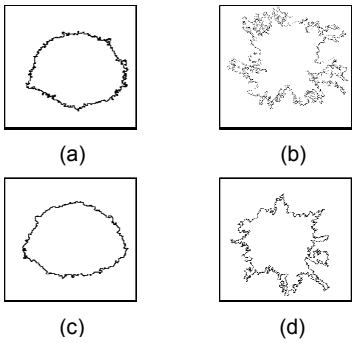

Fig. 2 Fractal dimension of colonies of *P. ostreatus* grown on different concentrations of DEHP. 500 mg/l at 24 h (a), 500 mg/l at 72 h (b), 1000 mg/l of DEHP at 24 h (c), and 1000 mg/l of DEHP at 72 h (d).

Table 1. Biochemical analysis of *P. ostreatus* grown on different concentrations of DEHP.

Biochemical parameters	Culture media			
	MS	MS+Glucose	MS+500 mg/L DEHP	MS+1000 mg/L DEHP
Laccases (U/gX)	39.11	27.65	150.52	60.96
Proteases (U/gX)	6532.10	11951.11	11048.15	9996.24
Chitinases (U/gX)	0.39	0	0.09	0.70
Glucanases (UI/gX)	7.02	5.61	21.31	21.53
Glycogen (mg/gX)	0.14	0.15	0.09	0.14
S-Glucans (mg/gX)	23.84	56.99	23.29	17.02
R-Glucans (mg/gX)	198.86	358.45	163.88	167.03

Conclusions.

It is shown that the DEHP is used as sole source of carbon and energy, since the content of glycogen and glucans was similar in the medium containing glucose and in 1000 mg/l of DEHP. The activity of proteases was similar in both media, which caused a metabolism cellular analogous to the Fd.

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