EFFECT OF INITIAL pH OF THE CULTURE MEDIUM ON THE EXPRESSION PROFILE OF LACCASE GENES OF *Pleurotus ostreatus* GROWN IN SUBMERGED FERMENTATION

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Introduction. *Pleurotus ostreatus* is a white-rot fungus that produces laccase isoenzymes that have a potential use in bioremediation processes (1). It has been suggested that the number and type of laccase isoforms depends on the conditions of development of the fungus (2).
In this study was evaluated the effect of initial pH of the culture medium on the expression of five laccase genes (Lacc9, Lacc10, Lacc4, LACC1 and Lacc6) of *Pleurotus ostreatus* grown in submerged fermentation (SmF).

Methods. *Pleurotus ostreatus* was developed in 125 ml flasks with 50 ml culture medium with glucose, yeast extract and mineral salts, the pH was adjusted to 3.5, 4.5, 6.5 and 8.5 with 0.1 M NaOH or HCl. Each flask was inoculated with 3 mycelium fragments of 4 mm of diameter obtained from the periphery of a colony grown on malt extract agar. Were incubated at 25 ° C for 23 days in orbital agitation at 120 rpm. Was sampled at 144, 168, 264, 312, 408, 504 and 528 h. Gene expression was observed by RT-PCR (3).

Results. Figure 1 shows the PCR products of the five laccase genes expressed by *Pleurotus ostreatus* grown in SmF at different initial pH of the culture media, different level and intermittency of expression were observed.

Conclusions. The initial pH of the culture medium is an important factor which regulates the expression of the laccase genes in addition to having an effect on the activity and number of isoenzymes produced. These results contribute with the understanding of the regulation of the expression of the laccase genes.

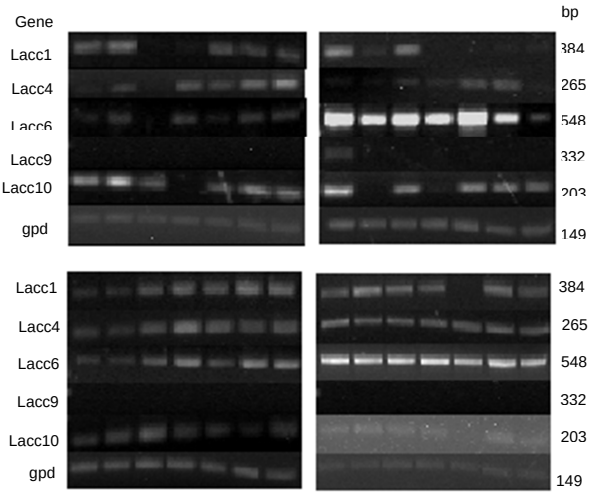

Fig. 1 Profile of laccase genes expression of *P. ostreatus* grown at initial pH of 3.5 (a), 4.5 (b), 6.5 (c) and 8.5 (d).

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References.

1. Díaz R. Efecto del pH inicial de desarrollo *Pleurotus ostreatus* en fermentación sumergida sobre su actividad de lacasas, Tesis de Maestría, CIBA-TLAX. 2009. IPN.
2. Giardina P, Palmieri G, Scaloni A, Fontanella B, Faraco V, Cennamo G, Sannia G. (1999). "Protein and gene structure of a blue laccase from *Pleurotus ostreatus*", *Biochemical Journal* 341, 655-663.
3. Téllez-Téllez M, Díaz-Godínez G, Aguilar MB, Sánchez C, Fernández F. (2012). "Description of a laccase gene from *Pleurotus ostreatus* expressed under submerged fermentation conditions", *BioResources*, 7(2), 2038-205