**"LA INGENIERÍA QUÍMICA: DESARROLLO, POTENCIALIDADES Y SUS RETOS"**

**POTENCIALIDADES DE CEPAS NATIVAS CUBANAS DEL GÉNERO *GANODERMA* PARA LA DEGRADACIÓN DE COMPUESTOS XENOBIÓTICOS**

***POTENTIAL OF CUBAN NATIVE STRAINS OF GENUS GANODERMA FOR THE DEGRADATION OF XENOBIOTIC COMPOUNDS***

1. Giselle Torres Farradá. University of Havana, Havana, Cuba. giselletf@fbio.uh.cu
2. François Rineau, Hasselt University, Hasselt, Belgium.francois.rineau@uhasselt.be
3. Lucía L. Ledo Alonso, University of Havana, Havana, Cuba.lucia.ledo@fbio.uh.cu
4. Ana M. Manzano León, Research Institute for Tropical Fruit Trees, Havana, Cuba. fitopatologia17@ifft.cu
5. Miguel Ramos-Leal , Research Institute for Tropical Fruit Trees, Havana, Cuba. fitopatologia18@ifft.cu
6. Sofie Thijs, Hasselt University, Hasselt, Belgium.sofie.thijs@uhasselt.be
7. Gilda Guerra, University of Havana, Havana, Cuba.ggr@fbio.uh.cu
8. Robert Carleer, Hasselt University, Hasselt, Belgium, robert.carleer@uhasselt.be
9. Jaco Vangronsveld, Hasselt University, Hasselt, Belgium, [jaco.vangronsveld@uhasselt.be](mailto:jaco.vangronsveld@uhasselt.be)

***Abstract***

*Environmental pollution with hazardous industrial wastes containing recalcitrant xenobiotics has become a major ecological issue. White-Rot Fungi (WRF) and they ligninolytic enzymes (laccases and peroxidases) are considered promising biotechnological tools to remove Persistent Organic Pollutants from industrial wastewaters and contaminated ecosystems. A high diversity within the genus Ganoderma has been reported in Cuba; however the diversity of their ligninolytic enzymes and the biotechnological potential of strains belonging to genus Ganoderma remains underexplored. The objectives of this study were: To analyze the diversity of ligninolytic enzymes of Cuban strains from the genus Ganoderma and to evaluate their potential for degradation of dyes and Polycyclic Aromatic Hydrocarbons (PAHs). Thirteen WRF strains were isolated from decayed wood in urban ecosystems in Havana and identified as Ganoderma sp. using a multiplex ITS-based PCR-method. The strains were cultured in SB-U medium with sugarcane molasses and the ligninolytic enzymes activities as well as isozyme analyses were measured on extracellular enzyme extracts. The results showed that Ganoderma sp. strains isolated differed in their ligninolytic enzyme activities, isozymatic profiles and degradative capacity. The strains were able to significantly degrade textile dyes, naphthalene, phenanthrene and fluorene without the addition of redox mediators. The PAH oxidation performed by the extracellular enzymes produced by Ganoderma strains generated non-toxic intermediate metabolites and the possible degradation pathway of these PAHs was determined. These findings hold promises for the development of a practical application for the treatment of textile industry wastewaters, as well as for bioremediation of polluted ecosystems by well-adapted native WRF strains.*

**Palabras Clave:** Hongos de la Podredumbre Blanca; Enzimas ligninolíticas; Compuestos Orgánicos Persistentes; Colorantes textiles; Hidrocarburos Policíclicos Aromáticos

***Key words***: White-rot fungi; Ligninolytic enzymes; *Ganoderma*; Persistent Organic Compounds; Textile dyes; Polycyclic Aromatic Hydrocarbons