

PRODUCTION OF BIOACTIVE COMPOUNDS AGAINST WOOD CONTAMINANT FUNGI: AN ARTIFICIAL INTELLIGENCE APPROACH

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ABSTRACT

The alarming problem of some fungal diseases in forest systems makes urgent the discovery of new compounds, with activity against new biological target or with a higher activity against pathogenic agents that cause the common diseases in forest systems. The integration of various disease control strategies, including biological control, should be considered to improve the efficacy and reduce fungicide levels in the environment. This paper describes the production of biopesticides based on natural endophytic bacteria, isolated from healthy *Quercus suber* (cork oak) and the use of Artificial Intelligence (AI) based tools for the development of intelligent predictive models, in particular those that may be used to predict the production of antifungal bioactive compounds to the maximization of antifungal bioactive compounds production by *Bacillus*. Active compounds, produced in liquid cultures, are iturinic lipopeptides that display antifungal activity against surface contaminant fungi, blue stain fungi and phytopathogenic fungi. ANN based approach was used to establish the conditions that maximize the production of antifungal bioactive compounds by *Bacillus* spp. cultures. The utilization of these natural and biodegradable compounds to control plant diseases is a promising ecological alternative to chemical treatment.