

**II. INTERNATIONAL HALICH CONGRESS ON
MULTIDISCIPLINARY SCIENTIFIC RESEARCH
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PROCEEDINGS BOOK

**EDITED BY
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**EVALUATION OF VIRULENCE AND THE LACCASE PRODUCTION ON
CRYPHONECTRIA PARASITICA VIRULENT AND CONVERTED STRAINS BY
CHV1 HYPOVIRUS**

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ABSTRACT

Biological control by hypovirulence is an efficient method to control chestnut blight. The presence of *Cryphonectria hypovirus* 1 (CHV1) in *Cryphonectria parasitica* reduces its parasitic growth and sporulation capacity, female fertility, pigmentation, oxalate accumulation and laccase production. Indeed, laccases are involved in lignin degradation, and are also considered as a virulence determinant in *C. parasitica*. The aim of this work was to evaluate the laccase production in both virulent and converted strains and to access the virulence of these strains in vitro and on dormant chestnut stems. Five isolates were converted with two characterized hypovirulent *C. parasitica* isolates (RBB111, SR44.2). To evaluate the virulence of the isolates, dormant chestnut stems were inoculated with the virulent isolates, their converted ones and the hypovirulent isolates. The qualitative evaluation of laccase production was performed using Bavendamm test and RBBR test. For quantitative evaluation of laccase production strains were grown on PDB (Potato Dextrose Broth, 24g/L) and the sample readings taken by spectrophotometry using ABTS. The hypovirulent isolates used in this work has complete ability to convert virulent isolates. The infection area on chestnut stems caused by virulent strains was significantly higher ($P < 0.05$) than the infection area caused by converted strains. The isolates Cast13 and Cast26 showed highest enzymatic activity. In the Bavendamm test, the highest dark area was observed for the converted strains Cast26/RBB111 and Cast17/RBB111 ($15.04 \text{ mm}^2 \pm 2.66$ and $14.30 \text{ mm}^2 \pm 1.02$, respectively). For the quantitative assay two isolates were evaluated and showed a decrease of laccase especially the one converted with RBB111

Keywords: *Cryphonectria parasitica*, virulence, laccase