

## ABSTRACT

*Aspergillus* fungi are very important in our lives as they play a key role in the recycling of environmental carbon and nitrogen. We can find them in different environments such as plants, seeds and soil. This genus has been extensively studied because of its ability to infect and produce mycotoxins in many commercial crops. In recent years, the scientific community has shown interest in finding antifungal ingredients from natural sources, resulting in the identification of various plant-derived compounds with antifungal activity.

In the present study, ten natural phenols were evaluated for their ability to inhibit the growth of *Aspergillus niger* fungus and the production of fumonisin B2. In particular, the antifungal effects of phenols were studied as the minimal inhibitory concentration, the mycelial growth, the conidia production and the germination of conidia of *Aspergillus niger* fungus were assessed. Results showed that the natural phenolic compounds in terms of antifungal activity with respect to the growth of the fungus *Aspergillus niger* showed the following order: carbarcol > thymol > isoeugenol > eugenol > 4-ethylguaicol > o-cresol > guaiacol > p-cresol > vanillin > vanilic acid. In addition, the inhibitory capacity of the phenolic compounds in the production of fumonisin B2 from said fungus was tested. The use of eugenol, isoeugenol, thymol, carvacrol and p-cresol decreased significantly (93-99%) the production of mycotoxin, called fumonisin B2. Overall, natural phenols can be considered as a pool of antifungal agents against *Aspergillus niger*.

**Keywords:** phenolic compounds, *Aspergillus niger*, antifungal activity, fumonisin B2, minimal inhibitory concentration, conidia production, conidial germination, mycelial growth, mycotoxins, natural products