

### **398. Impact of Climate Change on Ochratoxigenic Fungi Coffee in Colombia: The case of *Aspergillus carbonarius* and Ochratoxin A**

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Coffee is a source of yield in more than 70 developing countries, being of vital importance for the balance of revenue in Colombia. Mycotoxins in coffee have been a subject of constant study, mainly due to the problems it can cause in food safety, which creates difficulties in the commercialization of this commodity. Mycotoxins are produced by fungi that manage to contaminate coffee from the pre-harvest processes to the final product. The main mycotoxin contamination is given by aflatoxin B2 (AFB2), fumonisin B2 (FB2) and ochratoxin A (OTA), the latter being the only one with a regulation of specific limits in coffee products. Several studies have shown that *Aspergillus niger* and *Aspergillus carbonarius* are considered to be one of the main sources of OTA contamination in coffee beans producing relatively high amounts of this mycotoxin. However, in tropical regions such as Colombia, OTA is also produced by *Aspergillus ochraceus* and *Aspergillus westerdijkiae*, which are found more frequently. In recent years, coffee production has been intensely affected by the alterations brought about by climate change. There is a high risk that climate changes may be one of the sources that help in the proliferation of mycotoxigenic fungi and the occurrence of OTA.

The aim of this work was to study how future climatic conditions in Colombian coffee regions can potentially affect the distribution of *Aspergillus carbonarius* in the country, and the evaluation of PKS gene expression associated with OTA production concerning the temperature. It was found that temperature is a fundamental element that defines the growth, production and expression of OTA by *A. carbonarius*, determining a preference for high temperatures for its development, but tending to low temperatures for toxin production. Consequently, it was possible to suggest that in the future the coffee areas of Colombia will have their environment, bigger than the current one, for the growth of *A. carbonarius*, but on the contrary, with temperature increases, the probability of contamination by OTA will be reduced.