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Poster Communication Abstract – PH.31

SISTERS IN STRUCTURE, DIFFERENT IN CHARACTER - INVESTIGATION OF DIFFERENTIAL SPECIFICITY OF SOME BENZALDEHYDE AND CINNAMALDEHYDE DERIVATIVES IN *ASPERGILLUS FLAVUS* SECONDARY METABOLISM

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All around the world, the spread of some phytopathogenic fungi on agricultural crops entails the contamination of derived products by mycotoxins, secondary metabolites produced by various fungal species, mainly belonging to Aspergillus, Penicillium and Fusarium genera. Mycotoxin contamination of food and feed commodities represents a major threat from both an economic and a sanitary perspective, due to the high toxicity and carcinogenicity of such compounds to humans and animals. In this scenario, great are the expectations for a new generation of antimicrobials, as strenuous are the research efforts towards the exploration of diverse molecular scaffolds - possibly of natural origin – aimed at the synthesis of new compounds against the spread of hazardous fungi. As also high but winding are the paths leading to the definition of biological targets specifically fitting the drug's structural characteristics. Our study is addressed to inspect differential biological behaviors of cinnamaldehyde and benzaldehyde thiosemicarbazone scaffolds, exploiting the secondary metabolism of the mycotoxigenic phytopathogen Aspergillus flavus. Interestingly, owing to modifications on the parent chemical scaffold, some thiosemicarbazones displayed an increased specificity against one or more developmental processes (conidia germination, aflatoxin biosynthesis, sclerotia production) of A. flavus biology. Through the comparative analysis of results, the ligand-based screening strategy here described has allowed us to delineate which modifications are more promising for distinct purposes: from the control of mycotoxins contamination in food and feed commodities, to the environmental management of microbial pathogens, to the investigation of specific structure-activity features for new generation drug discovery.