
Effect of Ultraviolet Radiation on Conidia Survival of Potential Mycotoxigenic *Aspergillus* Species

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Resumo

Bio-geographical differences in fungal profile infection have been observed in the world, proving that the climatic conditions are decisive in the colonization. Nevertheless environmental conditions regarding to fungal development have been generally described in terms of temperature (T) and relative humidity (RH), while other important factors as ultraviolet radiation (UV) have received lower attention, despite the International Agencies consider that variations in UV-B radiation can have large effects on plant interactions with pests, with important implications for Food Security and Food Quality. To assess the effects of UV-A and UV-B radiation on survival of potentially mycotoxigenic fungi under in vitro simulated field conditions, conidial suspensions of isolates of *A. carbonarius*, *A. tubingensis*, *A. flavus*, *A. parasiticus*, *A. westerdijkiae* and *A. ochraceus* were filtered under vacuum onto individual sterile cellulose acetate filter membranes (pore size 0.45 μm) and dried at 37 °C overnight. Then spores were incubated under T and light cycles of 8h darkness (20 °C) and 16h of light (5h (from 20 to 30°C) + 6h (30°C) + 5h (from 30 to 20°C) for 15 days. Additionally, six hours of exposure per day to UV-A or UV-B radiation were included in the light exposure. UV doses used were 1.7 ± 0.2 mW/cm² of UV-A (peak, 365 nm) and 0.10 ± 0.2 mW/cm² of UV-B (peak, 312 nm) slightly higher than present sunlight UV mean values. Each five days (5th, 10th and 15th day) conidia were dislodged from two control and two irradiated membranes into 100 mL

Referência:

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sterile peptone (0.1% w/v) solution using a stomacher. Subsequently, a serial dilution was carried out and 100 μ L of each dilution were plated onto DRBC and incubated at 25 °C in darkness for two days. Afterwards the colonies were counted. The intrinsic decrease of viability of conidia along time was accentuated when they were UV irradiated. UV-B radiation was more harmful than UV-A. Conidial resistance to UV light was more marked in *Aspergillus* section *Nigri* (black), followed by *Flavi* (green) and *Circumdati* (yellow) and hence the pigmentation of the conidia could be related to UV sensitivity. Interestingly, different resistance was observed between species belonging to sections *Flavi* and *Nigri*. As conclusion, a possible increase in UV radiation related with climate change could lead to a reduction in the inoculum present in the field and even it could exert a selective selection on fungal species.

Palavras-Chave: *Aspergillus*, Ultraviolet radiation, Climate change

Agência de Fomento: