

Title Effect of photoperiod and day–night temperatures simulating field conditions on growth and ochratoxin A production of *Aspergillus carbonarius* strains isolated from grapes

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Abstract

The effect of light and temperature regimes simulating day and night in the field in the months preceding grape harvest on *Aspergillus carbonarius* growth and ochratoxin A (OTA) production were investigated. Twelve-hour photoperiod affected positively *A. carbonarius* growth with no differences between incubating the mould at day temperature (28 °C) or alternating day/night temperatures (28 °C/20 °C). Slower growth, however, was observed with constant incubation at 20 °C. Under 12h-alternation periods of day and night temperatures, growth was faster at continuous darkness than under continuous light conditions. Light did not cause any morphological changes in the aspect of the colonies.

No significant differences on OTA production were detected due to either fluctuating temperature or photoperiod. However, as photoperiod enhanced the growth of colonies, it also enhanced OTA accumulation. The ability of *A. carbonarius* to produce OTA reported in previous laboratory studies has been demonstrated to be stimulated in field conditions.