Title Skin damage, high temperature and relative humidity as detrimental factors for *Aspergillus carbonarius* infection and ochratoxin A production in grapes

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Abstract

This study investigated the impact of skin damage on *Aspergillus carbonarius* colonization and ochratoxin A (OTA) production in grapes at different temperatures and relative humidity. Four ochratoxigenic *A. carbonarius* strains isolated from wine grapes were used to inoculate artificially damaged and undamaged table grapes. Grapes were stored at three levels of relative humidity (80%, 90% and 100%) and at two temperatures (20 and 30 °C). After seven days, the infection percentage of *A. carbonarius* was recorded and OTA accumulation in berries was analysed. Damaged grapes were more commonly infected and development of colonies was higher than in undamaged ones; consequently more OTA was detected in the former treatment. Temperature and relative humidity had significant influences on both infection and toxin content. The amount of OTA detected at 30 °C was higher than at 20 °C in most of the treatments. The highest relative humidity (100%) led to maximum amounts of OTA while no significant differences were found between 90% and 80% in the OTA content. The implementation of preventive measures in order to minimise berry damage in the field by controlling pathogenic fungi and insects during grape growing and removing visibly damaged grapes at harvest may significantly reduce OTA contamination in grapes.