

Ochratoxin A Incidence in Dried Grapes Coming from Organically or Conventionally Managed Vineyards

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Abstract

Ochratoxin A (OTA) is a mycotoxin produced by several fungi of the genera *Aspergillus* and *Penicillium* that has detrimental effects on human and animal health. Grape and products derived from grapes are known to be prone to ochratoxin A formation. The aim of this study is to compare the incidence of OTA contamination in organically and conventionally grown Sultana dried grapes in order to put forward any potential risk that may occur due to the differences in the management system. Samples were collected from 143 sun-dried Sultana lots; 70 came from conventional and 73 from organic vineyards certified according to the Turkish Law and Regulations and the EU regulation (EC 2092/91). Representative samples were taken randomly prior to processing from lots in different packing houses in the Aegean Region of Turkey in 2004. The test samples were first sorted out, and berries were separated from cluster fragments, stems, or cap-stems that are normally removed during processing. Samples were slurried with water at a ratio of 1:1 for 15 minutes. Forty g slurry was mixed with 80 ml water and homogenized for one minute and then 100 ml of two percent NaHCO₃ was added and blended for two minutes. This mixture was filtered and filtrate was diluted with PBS. The diluted sample extract was loaded to the immunoaffinity column, washed with methanol, and eluted with two percent acetic acid in methanol. 1.5 ml of distilled water was passed through the column and collected in a glass tube to give a total volume of three ml. The sample (100 µl) was injected onto the HPLC system. Results are given as ng/g and are not corrected for recovery. The results showed that 24.4 % the total had no OTA formation and 54.3 % of the samples had OTA levels below one ng/g. The samples that had OTA levels exceeding the current permitted maximum level of ten ng/g in the EU and Turkey was calculated as 8.3 percent (8.5 % in organic and 8.2 % in conventionally grown Sultanas).

The frequency of OTA contamination was also similar in organically or conventionally grown raisins. The OTA incidence peaked around four ppb in both groups. After the peak of four ng/g, the number of samples with higher OTA contamination decreased. The contamination level increased again around 16 ng/g levels. The number of samples free of OTA contamination was higher in organic compared to conventional samples. It was concluded that factors related to intactness of the berry or to the practices or site specific factors could exert more significant effects on OTA occurrence rather than the farming system at large.

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