

Assessment of Ochratoxin A levels in Thessalian wines and evaluation of consumer exposure

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Abstract

Wine has been a key part of human culture for nearly 10,000 years and is still widely consumed. While moderate consumption offers health benefits, it may also contain harmful substances, such as ochratoxin A (OTA). OTA, a mycotoxin produced by fungi like *Aspergillus carbonarius* and *Penicillium verrucosum*, is commonly found in wines, from Mediterranean regions [1]. It is classified as a Group 2B carcinogen by the International Agency for Research on Cancer (IARC), posing potential cancer risks. The European Food Safety Authority (EFSA) has set a tolerable weekly intake (TWI) of 120 ng OTA/kg body weight [2]. This study aimed to evaluate OTA contamination in wines from Thessaly, Central Greece, using 100 samples from both Greek and international grape varieties. OTA levels were determined using the enzyme-linked immunosorbent assay method (ELISA kit), known for its cost-effectiveness, speed, and sensitivity, making it an innovative tool for rapid in situ assessment in wineries. The results revealed that 7% of the wine samples were contaminated with OTA, with concentrations ranging from 0.78 to 1.95 µg/L. The microclimate of specific regions in Thessaly appears to influence OTA presence, highlighting the need for ongoing surveillance of OTA levels in wine. Importantly, only 1% of the samples exceeded the regulatory limit of 2 µg/L. Based on OTA occurrence and wine consumption patterns, consumer exposure was considered negligible. The study underscores the importance of effective vineyard management and winemaking practices to minimize OTA contamination and safeguard public health.

References:

- [1] S. Zjalic, K. Markov, J. Loncar, Z. Jakopovic, M. Beccaccioli, M. Reverberi. *Toxins*. 16 (2024).
- [2] EFSA Panel on Contaminants in the Food Chain (CONTAM). (2019).