Natural occurrence of toxigenic molds and their secondary metabolites – Ochratoxin A (OTA) in black and herbal teas on the Serbian market

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Tea drinks are popular so their consumption is growing all over the world and becoming part of many lifestyles. During harvesting, handling, storage and distribution, teas are subjected to contamination by various molds, which may be responsible for spoilage and production of mycotoxins. According to mentioned the goal of this study was to evaluate presence of toxigenic molds and their secondary metabolites – ochratoxin A (OTA) in black and herbal teas on the Serbian market. Analyzed samples were collected from various retail shops from January 2015 until December 2016. Total number of analyzed samples was 787 (336 samples of black teas and 451 samples of herbal teas) and they were tested on molds according to ISO methodology (ISO 21527-2) and identified by dichotomous keys. The most predominant molds detected were: Aspergillus, Mucor, Rhizopus and Cladosporium. Ochratoxin A (OTA) is produced by Aspergillus spp. (A. ochraceus, A. westerdijkiae, A. steynii, A. carbonarius, A. foetidus, A. lactoceoffeatus, A. niger, A. sclerotioniger, A. tubingensis) so further analysis on OTA were conducted on samples in which were detected Aspergillus spp. by validated method (based on BS EN 14132). Aspergillus niger and Aspergillus flavus have been associated with black tea (56 samples). Aspergillus section Nigri, including Aspergillus niger, A. acidus, A. tubingensis and A. carbonarius were found in herbal teas (91 samples) available on the Serbian market. Production of OTA was quantified in mold isolate from black tea in 5% of samples (1, 2-4, 6 µg/kg). As far as isolates from herbal teas are concerned it was confirmed that 16% of A. niger isolates were able to produce OTA in quantity of 0.89-6.1 µg/kg. In order to minimize the health risks resulting from the consumption of teas contaminated by toxigenic mold and mycotoxins, it is imperative to monitor the presence of these contaminants prior their use.

Recent Publications


Biography

Radovan Cobanovic has his expertise in microbiological food safety analysis. During the ten years of work experience in the field of microbiological analysis of food he has participated in various activities related to the prevention of outbreaks by pathogenic microorganisms and improving the quality of production of various products. He went through all steps of microbiological laboratory from performing standard analysis to the development and validation of new lab developed methods. Now a days he is expanding his expertise in the field of virology, especially foodborne viruses Hepatitis A (HAV), Norovirus (NoV) genogroups I (GI) and II (GII) through participation in the opening of the department of virology analysis of food in SP Laboratory.

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