

Mycotoxins in Rice

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Mycotoxins are contaminants produced by fungi that occur naturally in foods such as secondary metabolites. Methods of cultivation make rice plants susceptible to fungi and consequently to mycotoxins contamination. It should be noted the incidence of mycotoxins may be important considering the dietary intake of rice. In this case, rice may be a potential source of mycotoxins and a special attention should be devoted to its quality.

The objective of this study was to evaluate quantitatively mycotoxins in rice from Brazil. A multi-mycotoxins method based on UPLC[®]-MS/MS was applied to investigate simultaneity occurrence of 12 mycotoxins: aflatoxins (AFB1, AFB2, AFG1, AFG2), fumonisins (FB1, FB2), ochratoxin A (OTA), sterigmatocystin (STC), and zearalenone (ZON), deoxynivalenol (DON), T-2 and HT-2 Toxins.

Sixty three rice samples collected in rice mills (bran rice, paddy, brown and polished rice) was extracted with acetonitrile-water (80:20, v/v), filtrated (Millex 0,45-µm PTFE) and directly injected (10 µL) in UPLC[®]-MS/MS without clean up.

Although almost half of samples (49%) were contaminated with at least one mycotoxin, only one sample contaminated with ZON was above the maximum limit established in Brazil. One sample was contaminated with five mycotoxins (AFB2, AFG2, DON, HT-2, STC) and two samples was contaminated with four analites. In this study *Fusarium* mycotoxins (ZON, DON, T-2 and HT-2) represented the largest contamination in rice samples.

The multi-mycotoxins method using UPLC[®]-MS/MS constituted an alternative for mycotoxins analysis in complex matrices. In this work, the recovery for 12 mycotoxins in rice was between 70 and 120% as recommended by SANCO. It could therefore be applied as routine method for different types of food as well as food production testing.

These results reinforce the needs to know about contamination in food products to verify the real extension of the mycotoxins to protect public health.