

Deoxynivalenol and T2 toxin content in wheat and bread from different Transylvania Region

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Abstract

The toxins produced by Fusarium fungi that contaminate cereals are a serious concern. The most important and broad family of fusariotoxins are trichothecenes, which comprise several components divided into 4 groups, with types A and B being the most significant. In order to determine the level of DON and T2 toxin, we collected a number of 25 samples, of which 10 were bread and 15 wheat, all of them were collected from the Transylvania region. In wheat samples, DON was identified in all 15 samples analyzed, with values between 33-2225 $\mu\text{g} / \text{kg}$, with an average value of 672.6 $\mu\text{g} / \text{kg}$ and with a median of 372 $\mu\text{g} / \text{kg}$. Of these, 4 samples exceeded the maximum limit imposed by European legislation of 1250 $\mu\text{g} / \text{kg}$ for DON, the maximum value being 2225 $\mu\text{g} / \text{kg}$. In the bread samples, the presence of DON was found in 8 out of 10 samples analyzed (80%) with values not exceeding the limits of European legislation of 500 $\mu\text{g} / \text{kg}$, between 0-321 $\mu\text{g} / \text{kg}$. Regarding the T2 toxin content, it was identified in only 2 of the samples analyzed (8%), a wheat sample and a bread sample, with values of 7 $\mu\text{g} / \text{kg}$ and 5 $\mu\text{g} / \text{kg}$, these values not exceeding European standards. The results obtained by us show a high DON contamination at the level of wheat grains harvested from different counties of Transylvania, some of the values not respecting the European standards, but with low values recorded in bread samples. Regarding T2 mycotoxin, this was detected only in 2 samples, with low values and for this reason do not consist a high risk for human health.

Keywords: wheat, bread, deoxynivalenol, T₂ toxin