

INTER-LABORATORY VALIDATION STUDY FOR DETERMINATION OF DEOXYNIVALENOL BIOMARKERS IN URINE

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Deoxynivalenol (DON) belongs to a large group of mycotoxins named trichothecenes, which represent the main group of *Fusarium* toxins commonly found in cereal grains.

The aim of the present study was to obtain representative data on the occurrence of DON and its metabolites in urine from European population groups, namely children, adolescents, adults, elderly, vegetarians and pregnant women and to get reliable information on the associations between concentrations of DON in urine and cereal-based food consumption data as provided by the investigated subjects, by using Food Frequency Questionnaires and 24h and 48h diary records.

Urine samples, collected in Italy, Norway and the United Kingdom, were assessed for free DON (un-metabolised form of the toxin), total DON (combined measurement of both free and DON-3-glucuronide (DON-3-Glc)) and de-epoxy deoxynivalenol (DOM-1) using HPLC coupled to mass spectrometry.

With the aim of guaranteeing both the maximum reliability of the results and the full harmonization of the performance among the three laboratories involved in the analytical work, an inter-laboratory validation of the method was performed according to the AOAC Part D: Guidelines for Collaborative Study Procedures to Validate Characteristics of a Method of Analysis [1]. The results obtained for the inter-laboratory validation were considered satisfactory, showing good performance across the range of investigated concentrations, i.e. 5 to 100 ng/mL for both, DON and DOM-1.

The evaluation of DON and DON metabolites in urine may constitute a valuable indicator of the dietary exposure that plays a pivotal role in the context of the risk assessment.

[1] Guidelines for collaborative study procedures to validate characteristics of a method of analysis (Appendix D), AOAC Official methods of Analysis, 2002, AOAC International. Available from <http://www.aoac.org>