

DETERMINATION OF THE MYCOTOXIN DEOXYNIVALENOL IN BEER BY COMMERCIAL ELISA TESTS AND ESTIMATION OF THE EXPOSURE DOSE FROM BEER FOR THE POPULATION IN THE CZECH REPUBLIC

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SUMMARY

About 150 litres of beer per person is consumed yearly in the Czech Republic. It is one of the highest consumptions in international comparison. Thus, beer can be a significant source of exposure of man to some contaminants. Among natural contaminants of beer belongs also deoxynivalenol (DON). 77 samples of beer being sold in the shopping network in the Czech Republic were examined by means of commercial ELISA sets for determination of deoxynivalenol (RIDASCREEN DON) at the end of the year 1994 and at the beginning of the year 1995. 23 % of the beer samples were under a detection limit of the ELISA test (6 µg of DON/litre). The other samples contained DON in amount of 7–70 µg/litre. The median came up to 12.6 µg of DON/litre. By variance analysis, statistically conclusive ($P = 0.01$) lower concentrations of DON were found in 11–12 % light beer in comparison with 10 % light beer and other beer. On the basis of results, the average exposure of beer consumers in the Czech Republic was estimated at a level of 0.146 µg of DON/kg of b.w./day. The calculation was based on a geometric mean of DON concentrations and on an average corrected consumption of individual kinds of beer. This exposure represents about 11.7 % of the proposed TDI (1.25 µg of DON/kg of b. w./day, determined from the view of the immunosuppression effect of DON). The detected exposure to DON from beer does not represent a serious health risk for a consumer in the Czech Republic. In calculations of the total exposure dose of DON for man from cereal sources is it, however, appropriate to include also beer.

Key words: mycotoxins, deoxynivalenol, ELISA, food, beer, health, risk

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