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Contaminants in organically and conventionally produced winter wheat (*Triticum aestivum*) in Belgium

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Abstract

A database has been compiled with the levels of important contaminants (mycotoxins, heavy metals and pesticides) measured from 2002 to 2005 in winter wheat (*Triticum aestivum*) grown in Belgium according to the organic and conventional farming systems. Assuming no further change in contaminant levels during cereal processing and during the preparation of foodstuffs, conservative intakes are estimated for the consumers of cereal-based products such as flour, bread, breakfast cereals, dough and pastry. The results show that for the consumer

of organic foodstuffs, estimated daily intakes are 0.56 µg deoxynivalenol (DON), 0.03 µg zearalenone (ZEA), 0.19 µg Cd, 0.28 µg Pb and 0.0006 µg Hg kg^{-1} body weight,

taking into account the average contaminant levels in unprocessed grains and the average cereal products consumptions in Belgium. For the consumers of conventional foodstuffs, the corresponding estimated daily intakes are 0.99 µg DON, 0.06 µg ZEA, 0.17 µg Cd, 0.12 µg Pb and 0.0007 µg Hg kg^{-1} body weight. In addition, it appears that for the consumers of conventional products, intakes of some post-harvest insecticides have to be taken into account (0.11 µg chlorpyriphos-methyl, 0.2 µg dichlorvos and 0.24 µg pirimiphos-methyl kg^{-1} bw). When expressed as a percentage of the tolerable/acceptable daily intake (TDI/ADI), it seems that the corresponding estimated (conservative) intakes are the highest for DON (56% for organic and 99% for conventional cereal products), ZEA (16% for organic and 32% for conventional cereal products), and Cd (19% for organic and 17% for conventional cereal products), all other estimated intakes of contaminants (including pesticides) being lower than 10% of the TDI/ADI.

Keywords: Contaminants, mycotoxins, heavy metals, pesticides, intake, wheat, cereal products, organic, Belgium

Additional information

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