



***Fusarium* mycotoxin content of UK organic and conventional barley**

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Abstract

Each year (2002–2005), approximately 100 samples of barley from fields of known agronomy were analysed for ten trichothecenes by gas chromatography-mass spectrometry (GC/MS) including deoxynivalenol (DON), nivalenol, 3-acetyl DON, 15-acetyl DON, fusarenone X, T-2 toxin (T2), HT-2 toxin (HT2), diacetoxyscirpenol, neosolaniol, and T-2 triol. Samples were also analysed for moniliformin and zearalenone by high-performance liquid chromatography (HPLC). Of the ten trichothecenes analysed from 446 harvest samples of barley, only two, diacetoxyscirpenol and neosolaniol, were not detected. The concentrations of type A trichothecenes were similar to those that occurred in wheat over the same period, whilst those of type B trichothecenes were markedly lower. Deoxynivalenol was the most frequently detected *Fusarium* mycotoxin, present above the limit of quantification ($10 \mu\text{g kg}^{-1}$) in 57% of samples, and was usually present at the highest concentration. A single sample (0.2%) exceeded the legal limit for DON in unprocessed barley over the 4-year period. Moniliformin and zearalenone were both rarely detected (2% of samples greater than $10 \mu\text{g kg}^{-1}$ for both toxins) with maximum concentrations of 45 and $44 \mu\text{g kg}^{-1}$, respectively. Year and region had a significant effect on DON and HT2 + T2, but there was no significant difference in the concentration of these mycotoxins between organic and conventional samples. Overall, the risk of UK barley exceeding the newly introduced legal limits for *Fusarium* mycotoxins in cereals intended for human consumption is very low, but the percentage of samples above these limits will fluctuate between years.

Keywords [risk assessment–modelling](#), [survey](#), [mycotoxins–Fusarium](#), [mycotoxins–trichothecenes](#), [mycotoxins–zearalenone](#), [cereals](#)