

## Ozonation in grains

The influence of ozone (O<sub>3</sub>) gas on reducing the contamination with Fusarium mycotoxins in malting wheat grains was investigated. Ultra-high performance liquid chromatography coupled to triple quadrupole tandem mass spectrometry (UHPLC-QqQ-MS/MS) and Orbitrap high resolution mass spectrometry (UHPLC-Orbitrap-HRMS) were used to determine mycotoxins in wheat grains before and 40 to 130 min after the exposure to 20 mg/l O<sub>3</sub>. Pearson's analysis ( $R^2=0.96-0.98$ ) showed a good correlation between the performance efficiency of both mass spectrometry quantification techniques. The concentrations of determined mycotoxins (zearalenone (ZEA): 19.5-459 µg/kg, deoxynivalenol (DON): 3,370-4,620 µg/kg, T-2 toxin: 19.5-35.4 µg/kg, and HT-2 toxin: 258-819 µg/kg) decreased notably, depending on the duration of contact with ozone. A notable elimination of ZEA, HT-2, and T-2 in wheat grain was observed: the content of these compounds was reduced on average by 58.6, 64.6, and 62%, respectively, already after 40 min of ozonation. The effect was less pronounced in the case of DON, for which the average degradation rate reached the maximum of only 25% after 130 min exposure. We conclude that ozonation for up to 130 min was effective for reducing the content of most mycotoxins determined in this study, except for DON, in contaminated grains to concentrations below the acceptable maximum levels in wheat in accordance to the EU regulations.

