Dried sausages fermented with Staphylococcus xylosus at different temperatures and with different ingredient levels - DTU Orbit (20/07/2018)

Dried sausages fermented with Staphylococcus xylosus at different temperatures and with different ingredient levels: Part II. Volatile components

Sausages, with added Staphylococcus xylosus, were fermented at different temperatures and with different added levels of salt, glucose, nitrite, nitrate and Pediococcus pentosaceus in accordance with a six factor fractional design. The volatile compounds from the sausages were collected by dynamic headspace sampling and quantified and identified by gas chromatography and gas chromatography-mass spectrometry. The effects of temperature and different ingredients on the levels of individual volatiles were tested using multiple linear regression and analysis of variance.

The study showed that sausages fermented under modern production conditions (high temperature, addition of glucose, nitrite, Pediococcus pentosaceus) in contrast to 'old-fashioned' sausages (added nitrate and fermented at low temperature) are likely to contain higher amounts of volatile acids, but lower levels of ethyl esters, certain short chain aldehydes as well as lipid autoxidation products.

Several nitriles, nitro-alkanes and one organic nitrate were identified for the first time in fermented sausages. Reaction mechanisms for those compounds and other classes of compounds are proposed and discussed in detail.