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Beer Ageing in Plastic Bottles

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The main problem of beer quality is the change of its chemical composition during storage, which negatively alters the sensory properties. Besides the storage conditions and beer composition, with the increasing use of plastic bottles, their composition is of the great importance as well. Plastic bottles have limited acceptance due to oxygen permeability, as beer is an oxygen sensitive beverage and with an increase in access to oxygen its flavour reduces, affecting shelf life of beer. It is therefore critical that polyethylene terephthalate (PET) bottles offer sufficient barrier properties.

The aim of our study was to compare beer stability, its physical-chemical and sensory properties, during storage in different PET bottles at the temperatures of 10, 20 and 30 °C. We used standard PET bottles, lightweight PET bottles with 2% of Amosorb – oxygen scavenger (AMS) and PET bottles with 2 and 6% of AMS. After three months of storage the highest concentration of oxygen (0.378 mg/l) was recorded in beer stored at 10 °C in the lightweight PET bottle with 2% of AMS. Beers keeping in this type of container had the highest oxygen concentrations at all temperatures. There was not a significant difference in oxygen concentration in beers stored in the PET bottles containing 2 or 6% of AMS. In these bottles the oxygen concentration was lower than 0.1 mg/l at all temperatures. The research confirmed that the oxygen concentration in beer is one of the most important parameters which influences stability of beer and its physical-chemical and sensory properties. In beers with the highest concentration of oxygen were the most significant aging changes. Samples stored at the temperature of 30°C reached generally the worst sensory results.

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Biography:

Daniela Smogrovicova is an Associate Professor and the Deputy Director of the Institute of Biotechnology at the Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava, Slovakia. She has been working in academia since graduating with a PhD degree in Biotechnology from the same University. Her scientific focus is on the physiology and biochemistry of yeast under stress conditions, beer and ethanol fermentation. She has published her work in 94 scientific papers, 4 patents and more than 200 conference contributions. Her papers have been cited 556-times per the SCI. She is a member of the Brewing Science Group of the EBC and of the Editorial Board of the Journal for Brewing, Malting and Beverage Industry.