

INFLUENCE OF YEASTS' INORGANIC NUTRITION ON FLAVOUR FORMATION DURING ALCOHOLIC FERMENTATION

I Simpósio Brasileiro de Bebidas Fermentadas e Destiladas., 1ª edição, de 13/04/2021 a 16/04/2021
ISBN dos Anais: 978-65-86861-97-6

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RESUMO

Yeasts ferment and generate a large group of compounds, most of them are produced during growth. Several works have been conducted focusing on flavour formation, metal ions influence on flavour stability, biosynthesis of higher alcohol, volatile ester synthesis, and metabolic production of short-chain fatty acids (Yu et al. 2016). However, none of the studies have focussed on the influence of inorganic elements on yeast-flavour production. Inorganic elements are vital for yeast growth, metabolism, and structure; therefore, they can influence yeast-flavour formation. This study investigates the influence of inorganic elements during alcoholic fermentation in a beer sweet wort from a single origin, which was fermented using yeast genus *Saccharomyces* W34/70, M2 and NCYC2592 strains, respectively. The experiment conducted for each yeast strain included 1 control and 9 inorganic supplementations (10 treatments: standard brewers wort, ammonia-nitrogen, phosphorus, potassium, magnesium, copper, zinc, iron, manganese, and a composite mixture of all nutrients). Each treatment yielded twenty-five compounds associated with a fermented model system (standard brewers wort) and were analysed by using HPLC (ethanol/glycerol) and GC-MS (aromas). Results from flavour profiling techniques showed ammonia-nitrogen, inorganic phosphate, potassium, and magnesium significantly increased the production of desirable compounds (ethanol, glycerol, higher alcohols, and esters); therefore, these treatments decreased acetic acid cumulation and off-flavour formation. Heavy metal ions mostly negatively affected the flavour formation. These work findings may become the beginning of a dogma's breaking down surrounding zinc's importance during yeast fermentation and yeast nutrition.

PALAVRAS-CHAVE: Brewing, Yeast *Saccharomyces*, Essential Inorganic Elements, Flavour Production

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