

Susceptibility to blackheart disorder in potato tubers is influenced by sugar and phenolic profile

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Abstract

Blackheart (BH) is a physiological disorder of potato tubers in which internal tissue becomes discoloured during storage. The development of BH has been previously linked with general phenolic accumulation. In this study, five potato stocks cv. Maris Piper with different susceptibility to BH were selected across two consecutive seasons, whereupon targeted analysis of sugar and individual phenolic compounds in two tuber sections (flesh and heart) was conducted after storage at 1.5 °C or after one week at 15 °C. The most susceptible stock to BH had the highest accumulation of reducing sugars, while crypto- and neo-chlorogenic acids (chlorogenic acid isomers) were more abundant in flesh tissue of non-susceptible stocks. It is postulated that these metabolites may represent putative pre-symptomatic predictive biomarkers of stock susceptibility to BH.