

Determination of yeast β -glucan in fortified milk formulations using enzymatic digestion coupled with HPAEC–PAD

Yeast β -glucan (YBG) is increasingly incorporated into nutritional products at low fortification levels, creating analytical challenges for accurate quantification in complex matrices. A sensitive and selective method based on enzymatic hydrolysis coupled with high-performance anion-exchange chromatography with pulsed amperometric detection (HPAEC-PAD) was developed for YBG determination in fortified nutritional products. The method was validated across powder and liquid dairy formulations and demonstrated satisfactory performance, with recoveries of 90.1–100.1%, repeatability (RSD_r) $\leq 8\%$, and intermediate precision (RSD_{INT}) $\leq 15\%$. Excellent specificity was achieved through selective removal of non-YBG-derived glucose, with no significant matrix interference observed. The limit of detection (LOD) and limit of quantitation (LOQ) were 0.0006 mg g^{-1} and 0.10 mg g^{-1} YBG, respectively (as glucose equivalents). Additional amyloglucosidase treatment enabled accurate quantification in chocolate-flavoured and plant-based formulations. This method provides a robust approach for routine determination of low-level YBG in fortified nutritional products.