

Reduction of saltiness and acrylamide levels in palm sugar-like flavouring through buffer modification and the addition of calcium chloride.

Abstract

Palm sugar-like flavouring (PSLF) is a type of flavour product that is formed by heating amino acids and sugar under specific heating conditions. Unfortunately, PSLF has a salty taste and contains high amounts of acrylamide. Hence, the objective of this research was to reduce saltiness and acrylamide without negatively affecting the aroma properties of PSLF. A decrease in the sodium phosphate (NaHPO_4) buffer concentration from 0.20 to 0.02 M was found to reduce sodium to approximately 15% of the level found in original PSLF. A further decrease (~25%) in the sodium content was achieved by removing monobasic sodium phosphate (NaH_2PO_4) from the buffer system. Meanwhile, the addition of CaCl_2 at 20–40 mg/L reduced the acrylamide content in PSLF by as much as 58%. A CaCl_2 concentration of 20 mg/mL was most favourable as it most efficiently suppressed acrylamide formation while providing an acceptably high flavour yield in PSLF. In view of the high acrylamide content in PSLF, additional work is necessary to further reduce the amount of acrylamide by controlling the asparagine concentration in the precursor mixture.

Keyword: Palm sugar-like flavoring (PSLF); Acrylamide; pyrazines; Furaneol; High performance liquid chromatography-mass spectrometry (HPLC-MS).