Changes in the physicochemical characteristics, including flavour components and Maillard reaction products, of non-centrifugal cane brown sugar during storage

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Abstract

Changes in the quality attributes of non-centrifugal cane brown sugar represented by physicochemical characteristics as well as flavour components and Maillard reaction products (MRPs) were monitored every 3 months over 1 year of storage. Stored cane brown sugar became darker, and its moisture content and water activity (aw) increased during storage. Fructose and glucose levels decreased as non-enzymatic browning via the Maillard reaction occurred in the stored sample, and a similar trend was also observed in acetic and acetic acids. Stored cane brown sugar lost its acidic and sulfuric odours (58.70–39.35% and 1.65–0.06%, respectively); subsequently, the nutty and roasted aroma increased from 26.52% to 38.59% due to the volatile MRPs. The browning rate of stored cane brown sugar was positively associated with the development of volatile MRPs (Pearson's coefficient = 0.660), whereas the amount of 3-deoxyxilocose, an intermediate product of the Maillard reaction, had a lower association with the brown colour due to its slow degradation rate.

Keywords

Brown sugar; Food storage; Physicochemical properties; Flavour components; Maillard reaction products

Figures and tables from this article: