

Chemical composition and storage temperature influence on textural characteristics of bakery fats derived from plant sources

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Abstract. Edible fats obtained from plant sources, characterized by their higher proportion of saturated fatty acids, typically exist in solid or semi-solid states and present different physical properties. The quality of solid or semi-solid vegetable edible fats plays a crucial role in the food production sector and for consumers alike. Attributes such as fat hardness and spreadability are significant factors for both industry and consumers, as these textural properties are directly influenced by the constituents of the fats. The chemical composition and fatty acid content of fats derived from plant sources correlated with textural characteristics such as hardness, plasticity, adhesiveness, viscosity, and also spreadability properties were investigated. The total color differences of fat samples varied from 7.06 to 45.50. Among the saturated fatty acids, palmitic acid occurred as the predominant one across palm oil, and margarine samples, while the most abundant monounsaturated fatty acid was oleic acid with an average of 36.41% for palm oil and 26.46% for margarine samples. The puncture test performed with three different penetrometers, and the spreadability test, conducted at two different temperatures, showed a differentiation of the analyzed fat samples.

Keywords: fats; fatty acids; texture; spreadability; PCA.

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