Qualitative Evaluation of Solid Fractions Isolated from Tallow as Replacement for Hydrogenated Fats

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Dry rendering under vacuum was employed to extract fat from sheep tail. The isolated fat (tallow) was fractionated by acetone crystallization to obtain one liquid and three solid fractions at 25°C, 15°C and 5°C. Each of the solid fractions and tallow were analyzed to determine melting point, fatty acid composition, iodine value, induction period, free fatty acid content, peroxide value and unsaponifiable matter. The results indicated that as the fractionation temperatures decreased, the concentration of unsaturated fatty acids in the fractions increased and consequently had a direct effect on the induction period and melting point. The solid fractions had higher amounts of palmitic and stearic acids and lower amount of oleic acid as compared to tallow. Oleic, stearic and palmitic acids were the major fatty acids present. The iodine values of the fractions were ranging from 18 to 32 reflecting the degree of saturation; therefore these products might be suitable replacements for hydrogenated fats in shortening production.

Keywords: Tallow, Fractionation, Hydrogenated Fats, Shortening