Fractionation of cocoa butter

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Cocoa butter is the archetypal confectionery fat in the edible oil industry, as it exhibits excellent melting properties. Fractionation of cocoa butter can be considered however, in order to: a) reduce the effect of compositional variation of different cocoa butters and hence permit production of a standard cocoa butter, or b) alter the structural and textural aspects of a certain cocoa butter and extend its applicability.

It is well known that cocoa butter largely consists of symmetric mono-unsaturated triglycerides, and therefore has a large crystallization potential in a narrow temperature interval. Consequently, in order to control the crystallization in the framework of a cocoa butter fractionation process, a good heat and mass transfer should be ensured. For that reason, a dynamic fractionation process will be limited to a certain degree of crystallization, since a too increased viscosity of the slurry will hinder agitation and proper process control. Processes requiring such an elevated degree of crystallization (e.g. high-stearin yield fractionation) can probably be performed more adequate with the use of the Statoliser® technology, which is in fact especially designed for such processes.

The global aim of this research was to study the technical possibilities of on the one hand a dynamic fractionation process of cocoa butter and on the other hand a static fractionation process of cocoa butter. An extra aim was to learn more about fundamental crystallization reactions taking place during fractionation.