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Author(s):

Elodie Arnaud, CIRAD, BP20, 97408 St Denis messag cedex 9, France

Antoine Collignan, CIRAD (same as above)

### **Dry fractionation of chicken fat: Effect of dry fractionation temperature and time on fractions properties**

Fats and oils dry fractionation process involves selective crystallization of the higher melting TAG through cooling of the melted fat followed by filtration. Cooling conditions affect crystallization and thus fractions properties but it also has an influence on the separation conditions. Depending on crystal morphology, more liquid is entrapped in the filter cake during filtration thus affecting the properties of this fraction called stearin.

We have previously shown that using a slow cooling rate during the nucleation step (low supercooling) allowed the formation of crystals with good filtration properties for chicken fat dry fractionation process. This first step given, the aim of this contribution is to present the influence of final temperature and time on fractions physical and chemical characteristics and filtration properties using experimental design. We determined fractions fatty acids compositions, solid fraction was characterized by its solid fat content versus temperature curve and the liquid one by the cold test. A filtration kinetic was performed and the suspension viscosity measured in order to evaluate filtration properties. Each response Y is described by an equation of the following form:  $Y = a_0 + a_1A + a_2B + a_{11}A^2 + a_{22}B^2 + a_{12}AB$  with A and B representing the coded process parameters (temperature and time).

Variations of fraction yields, chemical and physical properties characteristics can be explained as a function of process parameters. The determination of the significance of the coefficients parameters shows that final temperature has a more important effect on fractions yields, chemical and physical properties, and suspension viscosity than time. Similar fractions can be obtained at lower time by reducing temperature. Manipulating temperature and time, liquid fractions with similar properties can be produced over a range of stearin yields and properties.

Results presented in this study are useful for monitoring fat dry fractionation process.