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## The Influence of Regional Origin on Cocoa Butter from Colombia: Tumaco - Huila - Santander

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### Abstract

*Theobroma Cacao* L., the cocoa tree is a tropical cauliflorous tree that produces pods containing cocoa beans. These beans undergo various stages of processing, resulting in a finished product: chocolate. Cocoa butter constitutes about 55% of the dry weight of cocoa beans is composed of mainly triglycerides. The proportions of their fatty acids vary according to the variety of cocoa, due to climatic, geographical, and genetic factors. This leads to variations in physical properties, such as hardness or melting point, which in terms lead to different organoleptic properties and then health benefits.

Those physical properties influence the temperature that allows the crystallisation of cocoa butter to be processed, called tempering. This is one of the most important steps in the manufacture of chocolate, due to the diversity of fatty acids that make up cocoa butter blends. Indeed, these complex mixtures of triacylglycerols have different melting points. The fatty acid profile observed in cocoa butter is thus the main factor that can influence its organoleptic and rheological properties, as well as its processing qualities during the transformation stages.

On the contrary, we investigate single-origin chocolate. We, therefore, studied chocolate from three different regions of Columbia. These premises allow the cocoa trees to be grown under similar climatic and soil conditions and agronomic practices. It is important to notice that the traceability of different kinds of cocoa butter remains difficult. In our case, Luker Chocolate provides chocolate.

Studies show that cocoa butter extracted from hybrid cultivars of *Theobroma cacao* L. exhibit relatively constant melting characteristics. Based on genetic diversity but regional homogeneity, we investigated how this regional difference influences the organoleptic properties after the crystallisation of cocoa butter.

Thereafter, we demonstrate a difference in phase behaviour. This will enable the local transformation of single-origin cocoa butter, hence favouring rural development.

**Keywords:** Cocoa butter, consumer perception, local transformation