Analysis of the physical-chemical and microbiological profiles of four clones of *Theobroma cacao* L., from Santa Barbara del Zulia region, in Venezuela.

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*Theobroma cacao* is an amazonian fruit with multiple nutritional qualities. It consists of the kernels, from which are extracted a liquor with better sensory features than the original kernels. Cacao kernels go through a fermentation process where are produced a series of substances that diffuse through the tissue to generate the flavor and aroma of chocolate. The aim of this research is to assess and identify the precursors of flavor compounds, color and smell during the fermentation process of four species of cocoa from the area of Santa Barbara del Zulia, in Venezuela. Furthermore, we will also evaluate the microorganisms developed during this fermentation. The isolation and identification of the chemical precursors of the organoleptic features will be made by Solid Phase Micro Extraction (SPME) technique combined with gas chromatography coupled to mass spectrometry (GC-MS). To evaluate the microbiological flora associated to the fermentation process we aim to study the flora of molds, yeasts and acetic acid bacteria developed during fermentation. Associated compounds in the aroma of cocoa are related to the family of terpenes and other volatile compounds. In terms of taste it can be related to the amount of saturated and unsaturated fatty acids present in the sample. Regarding to the microorganisms associated with fermentation of cocoa, the literature reports that these can be grouped in yeast, lactic bacteria, followed by acetic acid and finally sporulated aerobics. In this study is expected to obtain a similar profile in terms of microorganisms.