Study of the physics and chemistry properties of a processing Frankfurt sausage with partial substitution the potato’s starch (*Solanum tuberosum*) to arracacha’s flour (*Arracacha xanthorrhiza*).

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**ABSTRACT**

This research analyzed Frankfurt sausage production, with partial substitution of the potatoe’s starch for arracacha’s flour ((75%M₁; 50%M₂; 25%M₃)), evaluating the texture (Warner Bratzler y Volodkevich) and water holding capacity (WHC) for dripping. It is proved M₂ has more acceptable texture in the used method and higher WHC, proceed to evaluate two new substitution 65%(M₄); 55%(M₅)), which ones evaluated a more specific substitution rank, the M₅ samples shown to have a lower toughness and high WHC, besides the highest efficiency in the elaboration process, that formulation was compared with a sausage have 100% to starch potatoes, evaluating the characteristics of physics, chemistry, sensory, mass and energy efficiency. the texture results proof the M₅ have less texture (39.35N) than control sample (44.72N), besides had the 20% more in WHC, a significant result in this research is the calcium content in M₅ is 5 time better than the control sample, this is for the calcium content in the arracacha. regarding the levels of fat, moisture and proteins don’t exist a significant chance, however the starch in sample M₅ have 15% less than the control sample, whereby the calories are less. The sensory analysis showed an acceptance to the M₅. To conclude, the substitution of the potatoes’ starch for arracacha’s flour doesn’t alters the formulation to physical-chemical level and sensory, and provides micro and macronutrients importance to the nutritional development.

Key words: Frankfurt sausage, arracacha’s flour, partial substitution, calcium