21st International Conference on

Food & Nutrition July 25-26, 2018 | Vancouver, Canada

Effect of freezing and sonication on the extraction yield of jicama starch

Lucía B. González-Lemus¹, Georgina Calderón-Domínguez¹, Ma. Paz Salgado-Cruz^{1,2} and Mayra Díaz- Ramírez³ ¹Instituto Politécnico Nacional, México ²Consejo Nacional de Ciencia y Tecnología (CONACYT), México

³Universidad Autónoma Metropolitana, México

New starch sources are studied, being jicama (Pachyrhizus erosus) roots one of them. However, researches about starch extraction are scarce and contradictory. Even more, there are not publications relating the release of jicama starch with pretreatment techniques. Hence, the aim of this work was to analyze the effect of freezing and sonication on the starch extraction yield and its relation with granule structure. It was observed that freezing and sonication had positive effect when applied independently, reversing this effect when used simultaneously. The largest yield value was obtained at a sonication time of 10 min ($24.76 \pm 2.4\%$), which represents a 46.9% increment with respect to the non-treated sample ($16.86 \pm 0.9\%$), without affecting the starch granule structure at any sonication level, as observed by microscopy. This result was confirmed by the data obtained by XRD analysis and total damaged starch. However, a small change in starch thermal properties was noticed, probably related to the release of fiber and air from the parenchima cells, which could be protecting the granule structure by reducing the effect of the sonication. Even under these conditions, yield extraction value was still low and thus more studies must be carried out to understand the process.

gcalderondominguez@gmail.com