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## Extensibility of Guadeloupe collection of *alata* yam accessions reveal potential candidates for pounded yam production

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### Abstract

This study aimed to provide information on the diversity of textural properties of the CIRAD/INRAe *D. alata* collection, which is one of the most diverse globally. A collection of 48 accessions of *alata* yam was analysed in the Antilles, Guadeloupe, in order to identify accessions that are potential candidates suitable as parents for transfer to Africa for the purpose of breeding for pounded yam production. Among the key sensory textural attributes preferred by consumers of pounded yam, the stretchability is more important, and it can be measured instrumentally as extensibility. Pounded yam was prepared by a standard procedure from known mass of fresh yams with known dry matter. Fresh yam was steamed for 20 min and pounded in a machine for 1-3 min with the amount of warm water necessary to adjust the dry matter of the final product to 30%. In the case of those yams with lower initial dry matter content, no water was added after steaming. The extensibility of the pounded yam doughs was determined by a standard procedure using the Kieffer dough rig under the conditions of tension, probe test speed of 2 mm s<sup>-1</sup>, distance of 40 mm and trigger force of 0.049 N. The extensibility parameters measured were extensogram peak force, extensibility, and extension area. Results show that dry matter of fresh yam and steamed yam ranged between 22-34% and 21-32%, respectively. All the extensibility parameters were discriminant, especially the extensibility and extension area. Among the most extensible (> 2 mm) accessions were TiViolet and Belep, while the poorly extensible (< 1.3 mm) accessions included Inrax 154, Cirad 235, Rosette, Florido, Defi, and Grand Etang. For the extension area, the accessions TiViolet, Bete Bete, Roujol, Peter, Noulelcae, Regional and Belep had higher extension area (0.15-0.27 N.mm), and the accessions with poor extension area (< 0.08 N.mm) include Malankon, HYB30, Cirad 235, Goana, Pyramide, Defi, and Inrax 154. Significant correlations were found among the dry matter of fresh yam, steamed yam, and the extensogram peak force and extension area. Dry matter may be a good trait for screening yam accessions with good pounded yam extensibility.

**Keywords:** Extensogram, kieffer dough extensibility, pounded yam, stretchability