

Physicochemical and pasting properties of two varieties of Andean amaranth (*Amaranthus caudatus*)

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Dietary guidelines recommend an increase in the consumption of whole grains due to their role in reducing the risk of chronic degenerative diseases. Andean grains are whole grains with many qualities as raw material to be transformed into functional foods. Amaranth (*Amaranthus caudatus*) is an Andean grain, which is endemic to Bolivia, Peru and Ecuador, mainly. The properties of raw materials largely depend on their chemical composition. The objective of this study was to evaluate the physicochemical and functional properties of two varieties of Andean amaranth, Tomina and Barbechos. Both varieties showed the following composition: protein 13.1 – 13.4, fat 8.08 – 9.50, ash 2.64 – 2.83, crude fiber 3.83 – 4.07, carbohydrates 72.6 – 70.0 and starch 64.7 – 62.8 g/100g for Tomina and Barbechos, respectively. Amaranth starch was characterized by the absence of amylose. The pasting properties were evaluated, the pasting temperature (PT) was from 61.8 to 65.2°C, the peak viscosity (PV) was from 1054 to 1178 cP, the holding strength (HS) was from 592 to 574, the breakdown (BD) from 462 to 603 cP and the final viscosity (FV) from 955 to 941 cP for Tomina and Barbechos, respectively. The solubility increased around 75°C. The proximal analysis had slight differences in fat and crude fiber content. However, the amylase-lipid complex formed by the thermal process may not exist due to the absence of amylose and the fat may be more accessible in the final products. Pasting properties were related to the absence of amylose with low values for SB and BD. The structure of amaranth grains, absence of amylose and high swelling power, indicates that it is suitable for use in food applications, under heat or cold thermal processes or texture improver, as well as non-food uses. The information obtained in this study could be useful for the food and related industries that make use of amaranth or amaranth starch.

Keywords: whole grain, amaranth, Andean, starch and amylose.