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Quinoa wet-milling: effect of steeping conditions on starch recovery and quality

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- It was developed a procedure for the isolation of quinoa starch by wet milling
- The steeping time had effect on starch recovery
- The starch quality was affected slightly by steeping time in terms of amylose/amylopectin ratio, protein content and damage starch content.

Usually, cereal milling schemes are classified as dry or wet milling. In dry milling the aim is to separate the anatomical part of the grain to produce mainly flour, whereas the purpose of wet milling is to separate the chemical components of the grain, such as starch, protein, fibre and lipid to obtain the purest possible fraction of each component. Cereal starches play an important role in the food and non-food industries for their low cost, availability and ability to impart a wide range of functional properties. They are widely used as ingredients in many foods to improve appearance, texture, and overall acceptability. The main objective of this research was to isolate starch, proteins and fibre components from quinoa by wet-milling procedure. It was investigated the effect of steeping time on starch recovery and its quality. The steeping conditions investigated were at 40°C during 1, 5 and 9 hours in SO₂ solution with lactic acid. The effect of steeping time on starch quality was evaluated in terms of amylose/amylopectin ratio, whiteness, proteins, lipids, and damage starch contents. Results showed how the different steeping times affected the fraction yields and starch recovery and its quality. The wet-milling process used in this study caused a highest starch recovery level from quinoa after 5 hours of steeping at 40°C. Generally, the wet-milling method used did not modify significantly the starch quality although there was a trend towards better starch quality in the fraction obtained around 5 hours of steeping. In this sense, it could be taken into account the economic factor of steeping time against the starch quality/recovery obtained by wet milling for finding the more convenient steeping conditions.

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