

ABSTRACT

Quinoa is a potential alternative to accommodate increasing demand of protein isolate as they have high nutritional value, however, quinoa has relatively low protein content. This problem could be combated through enzymatic pre-treatment. This study aims to observe the difference and similarity of composition of quinoa protein isolate that are and are not pre-treated with Viscozyme L. White quinoa is grinded into flour and defatted using hexane. Two defatted quinoa flour samples, one pre-treated with Viscozyme L (QPI-E9) and the other remaining untreated (QPI-NE9) are solubilized in 0.015 M NaOH in 1:10 flour to NaOH solution, adjusted to pH 9. The solution is centrifuged at 4000 rpm and the pH is adjusted to 4.5, followed by further centrifugation, neutralization, freeze drying, and analysis. The samples and defatted quinoa flour are then analysed based on protein, ash, fat, moisture, and carbohydrate (by difference) content. Compared to defatted quinoa flour, the protein content of the isolate increased from 6.08% to 61.46% (QPI-NE9) and 69.57% (QPI-E9) , while the carbohydrate content decreased from 77.03% to 22.11 (QPI-NE9) and 17.23% (QPI-E9) The fat content decreased from 1.80% to 0.91% in QPI-NE9, however increased in QPI-E9 (2.25%). The ash content increased in QPI-NE9 from 2.34% to 3.67%, however decreased in QPI-E9 to 0.03%, while the moisture content only slightly decreased from 12.74% to 11.85% (QPI-NE9) and 10.93% (QPI-E9). For future studies, analysis of SDS-PAGE, scanning electron microscopy, and functional properties may further identify difference in composition and characteristics of enzyme-treated QPI.

Keywords: quinoa protein isolate, defatted quinoa flour, Viscozyme L, carbohydrase, proximate analysis