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Effect of pH and holding time on the characteristics of protein isolates from *Chenopodium* seeds and study of their amino acid profile and scoring

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Running Title: Functional & nutritional characteristics of *Chenopodium* protein isolates

Abstract

Alkali extraction and acid precipitation methods were adopted to isolate protein from *quinoa* and *album* seeds of variety *Chenopodium*. Different pH dispersions (3-11) of isolated proteins were prepared and effects of pH and holding time on protein characteristics were evaluated. The pH-10 of extraction medium was found suitable for protein extraction on the basis of yield, purity, solubility and colour having isoelectric pH of 4.5. Yield and purity of protein isolates (PI) of *quinoa* and *album* varied from 8.12-12.22%; 74.19-85.07% and 7.71-10.98%; 77.16-86.12%, respectively. Overall, pH and time had significant effect on functional properties of PI of both seeds. Quinoa PI had higher emulsifying activity, emulsion stability, water binding capacity and dispersibility, whereas, foaming capacity and stability were higher for album PI. Nutritional indices were 64.20 and 64.58 for quinoa and album PI, respectively, whereas, amino acid scoring (FAO, 2013) indicated, isoleucine, leucine and valine as the limiting amino acids.

Key words: Protein purity; particle size; functional properties; isoelectric pH; protein quality; nutritional profile

1. Introduction

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