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INTRODUCTION

Quinoa (Chenopodium quinoa) and kiwicha (Amaranthus caudatus L.) are Andean grains that are gaining popularity worldwide due to its excellent nutritional value and its versatility as gluten-free products (1). Nowadays, consumers are demanding ready-to-eat foods as snacks and popped products because of changing life style and attention is being focused on the Andean pseudocereals. Quinoa and kiwicha are important sources of essential amino acids, dietary fiber, polyunsaturated fatty acids, minerals and vitamins, as well as phytochemicals (2). Puffing process can be presented as a low cost technological process to improve the quality of quinoa and kiwicha products with health-promoting properties. However, the effect of dry heat puffing on nutritional quality and phenolic profile has not been reported so far.

OBJECTIVES

The aim of this study was to characterize the impact of dry heat puffing on nutritional composition, fatty acids, amino acids, phenolic profile and composition of quinoa and kiwicha seeds.

MATERIAL AND METHODS

Quinoa (var. Pasankalla) and Kiwicha (var. Centenario)

Popping process 180 °C, 2 min

- Proximate composition by AOAC (3).
- Free fatty acids by gas chromatography (4).
- Amino acids by HPLC (5).
- Protein quality indices: Calculated EAAI, PER, NI (6)
- Phenolic analysis by HPLC-DAD-ESI/MS (7)

CONCLUSIONS

✓ Popped quinoa and kiwicha retain their nutritional value in a great extent
✓ EAA, hydroxyxycinnamic and hydroxybenzoic acids were the most affected by puffing
✓ EAA suffered a slight degradation by puffing but their protein quality was still adequate
✓ Popped enhanced flavonoid bioavailability in quinoa
✓ Popped quinoa and kiwicha are ready-to-eat products of adequate nutritional value.

References


RESULTS

Figure 1. Proximal composition of raw and popped quinoa and kiwicha seeds (g/100g)

Figure 2. Fatty acid composition (% of oil) of raw and popped quinoa and kiwicha seeds (PUFA, polyunsaturated; MUFA, monounsaturated; SFU, saturated fatty acids)

Table 1. Essential amino acids (EAA, g/100g protein) and calculated protein quality indices of raw and popped quinoa and kiwicha seeds; BV, biological value; PER, protein efficiency ratio; NI, nutritional index.

Table 2. Phenolic families concentration (µg/g) in raw and popped quinoa and kiwicha seeds

Acknowledgments

This study was funded by the Ministry of Economy and Competitiveness (Spain) and the European Union through the project AGL2013-43247-R. E. Peñas thanks to Ramón y Cajal Programme and Prof. Paucar-Menacho to Consejo Nacional de Ciencia y Tecnología (Peru) for financial support.