Proximate and Mineral profile of Quinoa (Chenopodium quinoa), and kiwicha (Amaranthus caudatus) consumed in north of Argentina

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Introduction

Quinoa (Chenopodium quinoa) and kiwicha (Amaranthus caudatus) are pseudocereals of Andean origin that have been cultivated in Argentina for thousands of years. They are prepared in the same manner as cereals like wheat and rice(1). These pseudocereals gained special attention by the scientific community in part due to their high nutritional value and also because they can be consumed by persons who are not gluten tolerant such as babies up to six months or those who suffer from celiac disease. Therefore the nutrient analysis with the purpose of including these foodstuffs in the Argentinian Food Composition Databank is of utmost importance.

Materials and Methods

Ash, Moisture, Dietary Fibre, Protein, and Fat content were determined by AOAC methods. Calcium, Copper, Iron, Potassium, Phosphorus, Magnesium, Zinc and Manganese were analyzed by ICP-MS and trace elements by ICP-OES according to EuroFIR guidelines for laboratory analysis (2). This included criteria on sample handling, an appropriate analytical method in terms of precision and accuracy, limit of quantification, selectivity, and an effective internal and external quality control program including appropriate use of Certified Reference Materials (CRM) and participation in adequate Proficiency Testing Schemes carried out by laboratories ISO/EN 17025. Values published in EuroFIR platform for rice and wheat are used for comparison. Each analysis was performed in triplicate, by two operators, and for all determinations coefficient of variation were under repeatability conditions was evaluated and accepted only if lower than 10%.

Results and Discussion

Results obtained for inorganic components are presented in tables 1 to 3. The optimization of analytical conditions in particularly for sample digestion were carried out under an Internal Quality Control procedure implemented in the laboratory in accordance with EuroFIR guidelines. Laboratory performance was guaranteed by regular participation in PT schemes launched by PT providers such as FAPAS, Z<2 were obtained in participation programmes. Results obtained for CRMs in the assays were in accordance with certified values.

Data on trace elements, under IQC conditions, are published in Tables 2 and 3. Higher values for elements were obtained in Amaranthus. When compared these values with data from rice and wheat belong to Danish Food Composition Databank and are linked to EuroFIR platform*

Conclusions

The observed values, obtained in laboratory analysis, are in agreement with literature. The quality control procedures implemented in this work are a guarantee of reliability of the work. The main purpose of the data obtained is to be included in National Food Composition Databanks to guarantee that data on food consumed in local place are used to implement national public nutrition health. This are crucial to identify food health disease relationship. Guidelines for laboratory performance are paramount to enhance the acceptability of values in LATIN FOODS and other Food Data regional organizations. This provides the necessary information to the users of Food Composition Databanks who wish to have an overview of the parameters, which influence the estimation of nutrient intake, and may affect the diet-disease relationship.

References

(2) www.eurofdb.net
(3) www.danishfoodcompositiondatabank.com

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