

STUDY OF THE RELATIONSHIP BETWEEN PHYTIC ACID CONTENT AND α -AMYLASE ACTIVITY IN DIFFERENT WHEATS FLOUR AND ACRYLAMID CONTENT IN BREADS MADE OF THEM

Farzaneh Darikvand¹, Javad Keramat², Atoosa Abdollahi¹, Ahmad Reza Golparvar¹

1-Faculty of Agriculture, Islamic Azad University of Khorasgan (Isfahan)

2-Faculty Member of IUT (Isfahan University of Technology)

Responsible author Email: Fdarikvand@yahoo.com

Introduction

Phytic acid is found in cereals in high concentrations and due to its inverse effect on access to minerals, is often known as a natural anti-nutritive factor. There are also researches which shows its inhibiting effect on α -amylase activity. In recent decade, the major problem in the top of food health issues is an unwanted production of acrylamid due to reaction between amin group of amino acids like Asparagine and carbonyl group of reducing sugars like glucose, fructose.

Which exists in most starchy foods made from plants that have been affected by the thermal process for example Sangak bread which is one of the traditional breads in Iran and has high nutritional properties, appears to have potential for formation of acrylamid.

Materials and methods

In this research some traits were measured including moistured, α -amylase activity (falling number) and acid phytic content in 7 different varieties of Iranian wheat and acrylamid content in 7 different varieties. In this regard, α -amylase activity in wheat flour samples was measured by falling number device and acid phytic content in wheat flour samples was measured by high performance liquid chromatography with refraction indicator (HPLC/RI).

Acrylamid content of breads made of this wheat was measured using gas chromatography with electron capture detector (GC/ECD). The data were entered in SPSS software and were analysed.

Result and discussion

The relationship between 3 variables : falling number, phytic acid and acrylamid was determined in 7 varieties of Iranian wheat using Pearson correlation coefficient. The relationship between 2 variables : falling number and acrylamid content and also the relationship between falling number and also the relationship between 2 variables : phytic acid and 7 conventional Iranian wheat using Pearson correlation coefficient was too low ($p > 0.05$). This rate is not statistically significant ($p > 0.05$).

Furthermore, by increasing moisture, falling number rate has been enhanced and phytic acid content has decreased finally variety too was recognized as the best variety due to the minimum acrylamid content and its appropriate chemical traits for baking Sangak bread.

Key words: wheat, Sangak bread, α -amylase activity (falling number), HPLC/RI, GC/ECD.

References:

- Hamada JS. 2002. Scale-up potential of ion-pair performance liquid chromatography method of product biologically active inositol phosphates. *Journal of chromatography A*, 944: 241-248
- Zhu Y, Li G, Duan Y, Chen S, Zhang C, Li Y. 2008. Applications of the standard addition method for the determination of acrylamide in heat-processed starchy foods by gas chromatography with electron capture detector. *Food chemistry* 109:899-908.



The 1st International Conference on New Ideas in Agriculture
Islamic Azad University Khorasgan Branch
26-27 Jan. 2014, Isfahan, Iran

