



DEFENS



UNIVERSITÀ DEGLI STUDI DI MILANO

# 15<sup>th</sup> EYCSTW



**15th European Young Cereal  
Scientists and Technologists  
Workshop**

April 26<sup>th</sup>-29<sup>th</sup>, 2016  
Bergamo, Italy  
Centro Congressi "Giovanni XXIII"

**CENTRO CONGRESSI**  
GIOVANNI XXIII

## Effect of cooking time on *in vitro* starch digestibility and bile acid binding capacity of pasta\*

Seher Serin, Özge Durkan and Sedat Sayar

Department of Food Engineering, University of Mersin, 33342 Mersin, Turkey

sserinkarayiyen@gmail.com

- Determination of bile acid binding capacity levels
- Determination of amount of resistant starch
- Investigation of nutritional benefits

Pasta is a popular carbohydrate-based food. It has an important place in the human diet since it can be easily prepared and economic. Pasta has consumed in different ways according to the cooking time. Pasta cooking time has shown to be influenced by starch gelatinization. The pasta with short cooking time termed as “al dente”. The starch in “al dente” pasta does not completely digested. Namely the “al dente” pasta contains resistant starch (RS). Resistant starches have physiological functions similar to dietary fiber. Dietary fiber reduces cholesterol levels more than %20 in the blood. Additionally, RS plays a role as a substrate for the colonic microflora in the large intestine. RS has positive effect to against the risk of type 2 diabetes, coronary disease, obesity and inflammatory bowel disease. The aim of this study was to investigate the possible nutritional benefits provided by the non-digestible part of pasta. Pasta was cooked in boiling water for 7 minutes for the “al dente” samples and for 11 minutes for the normally cooked samples. Samples were cooled after cooking and passed from an electric mincer. *In vitro* digestion analyses were performed by using the method given in Sayar et al., 2005. Bile acid binding capacity was determined by using Bile acid analysis kit (Bile Acid Kit: Product No: 450A, Trinity Biotec Plc, Wicklow, Ireland). The results showed that “al dente” samples have lower digestibility than the normally cooked samples, as expected. Bile acid binding capacities were determined to be considerably lower than the positive control cholestyramine. However, there was no significant difference between the bile acid binding capacities of the two samples that have different cooking time. In the continuation of this study, the digestion residues from these two different samples will be used as a substrate for colonic fermentation study in order to determine the extent and the products of *in vitro* fermentation end on the depletion of available carbohydrates during *in vitro* fermentation.

*Seher Serin is a Research and Teaching Assistant at the University of Mersin. She is a PhD student in Department of Food Engineering. She has been studying investigation of in vitro digestibility, bile acid binding capacity and properties of in vitro fermentation of foods contained different types resistant starch.*

\* This study was supported by the Scientific Research Projects Unit of Mersin University with the grant number 2016-1-TP3-1397