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Slowly digestible and resistant starches in food and their role in nutrition

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Introduction & Aim: As to human nutrition, starch in food can be divided into rapidly digestible (RDS), slowly digestible (SDS) or resistant starch (RS). RDS is degraded to glucose in 20 min after enzymatic activity; SDS is changed into glucose while being digested in the small intestine for up to 120 min. The RS passes into the colon, where it is metabolized into secondary products (short chain fatty acids, SCFSa) by colonic microflora and behaves in a way similar to dietary fiber. SDS has beneficial physiological effect on the reduction of post-prandial glycemic responses. The SCFAs coming from RS are known as the main nutrient of the colonocytes and a lack of butyrate would increase the risk for some colonic diseases. The purpose of this study is to describe the experience of increasing SDS and RS in food together with the impact on sensory properties.

Methodology & Theoretical Orientation: Based on the literature data the study was focused on laboratory extrusion cooking, and on dough fermentation and baking of bread. The additives were amylose, wheat and pea starch, chemically modified starches and starch from amylomaize.

Findings: High RS content in extrudates and bread was observed for amylose, pea starch and starch from amylomaize. But also water addition, compression ratio of the screw and temperature regime was important for high SDS and RS content in extrudates. The stiffness and volume of the bread was worse when compared with the reference and depended on the added amount.

Conclusion & Significance: The recommended daily intake of RS may be satisfied after 5-10% addition of starch from amylomaize into the dough. Even legumes can increase SDS and RS in the food.

Biography

Evzen Sarka completed his PhD from the University of Chemistry and Technology, Prague, Faculty of Food and Biochemical Technology in 1976. He was an Associate Professor since 2012. His research interests are: sugar and starch technology, image analysis measurement; modeling processes in carbohydrate technologies, biodegradable plastics, starch modification and starch digestibility. He is a Member of ICUMSA (International Commission for Uniform Methods of Sugar Analysis) and of ESST (European Society of Sugar Technologists.

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