Proceedings of the LXII SIGA Annual Congress
Verona, Italy – 25/28 September, 2018
ISBN **978-88-904570-8-1**

Poster Communication Abstract – 6.15

A NEW BARLEY BETA-GLUCAN DRINK

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β-glucans, barley, health benefits

The project aims to optimize the exploitation of an elite barley cultivar, powered by Agroalimentare Sud SPA, characterized by high levels of β-glucan accumulation.

(1,3-1,4) β-glucans are an important component of cell walls of barley grains and they are known to exhibit diverse beneficial effects to human health.

They are involved in the reduction of the risks of chronic health problems, such as those associated with cardiovascular diseases because of the lowering in blood cholesterol and those associated to diabetes, because of the regulation of blood glucose levels, as demonstrated by several studies in humans and animal models. For this reason, recently, both Food and Drug Administration (FDA) and European Food Safety Authority (EFSA) authorized the labelling of foodstuffs with nutrition and health claim statements permitting oat and barley β-glucans to be described as beneficial to health.

Three barley varieties are included in the project, all cultivated by the partner company in a single specific location (Puglia): a high β-glucan accumulating one (B1), a rowed BETA variety (B4) and a low β-glucan accumulating control variety (B5). The analyses are performed on barley grains collected for the three varieties in an interval between 0 and 28 days after flowering (DAF) at five different time points.

Here we report the characterization of β-glucan and starch accumulation in elite barley varieties to identify the grain developmental stage associated with higher β-glucan content. Furthermore, the expression profiles of candidate genes involved directly or indirectly in β-glucan biosynthesis are defined to identify the target genes with a prominent role in the accumulation of this polysaccharide.

The project is also focused on the set-up of protocols for β-glucan extraction and solubilization, preserving functional features and compatible with their use as a foodstuff.