Benefits of variety Kornelija to grain processing companies

The hulless barley variety *Kornelija* is characterised by **coarse grains and absolute hullessness properties** (the grain hulls is 97-100% detached during threshing), which can ensure **a production yield of 10-12% larger** from one tonne of grain compared to those covered barley, in which the total weight of hulls is also comprised as part of the grain. Due to the fact that the hulless barley variety *Kornelija* do not require the grain to be mechanically abraded of hulls during processing, it saves energy and time, and minimizes production waste and hence equipment cleaning costs. Test weight of the hulless barley variety *Kornelija* has on average been 8% higher compared to the standard barley variety "Ansis", which means that the storage and transportation of grain require less space than that of covered barley varieties.

	Hulless barley					**Covered barley**
	Kornelija	**Irbe**	**Pihl**	**Naku**	**Pirona**	**Ansis**
1000 grain weight, g	**55**	47	48	50	41	47
Test weight, g L^{-1}	**824**	850	833	829	803	670
Hull content, %	**0-3**	0-3	0-3	0-3	0-3	10.0-12.0

Table 1 Characterisation of benefits of the variety Kornelija

In the production of functional food products, the hulless barley variety *Kornelija* can both replace the currently used cereal raw materials and become an inspiration for the development and introduction of novel foods into production, with particular emphasis within the industry on raw materials, biologically active ingredients and nutritional value. A comparison of the biochemical composition of the hulless barley variety *Kornelija* with other cereal species currently available on the market for food products, including functional products, is shown in Table 2.

Feature	Hulless barley *Kornelija*	Barley	Oat	Wheat	Rye
Protein, %	**15.3±2.9**	11.4±1.7	10.58±0.67	12.7±0.65	9.8±0.07
Dietary fibre, %	**19.47±2.99**	20.82±1.02	17.63±1.52	13.06±0.35	15.7±0.42
β-glucans, %	**5.30±0.6**	4.24±0.4	3.15±0.19	0.18-0.89	1.3-2.2
Total fats, %	**2.35±0.15**	2.23±0.16	5.15±0.19	2.1±0.03	1.8±0.04
Vitamin E (α-tocopherol), mg kg^{-1}	**8.18±1.84**	8.70±1.74	7.80±2.36	10.1	8.5
Total phenolic compounds, mg GAE 100 g DW	**196.8±19.1**	175.0±12.1	123.64±15.6	95.88±8.28	88.0±13.39
DPPH antiradical activity, %	**74.7±0.42**	68.0±3.7	18.56±2.6	2.21±1.01	14.6±2.65
Zn, mg kg^{-1}	**30.5±13.5**	20.8±3.7	26.1±3.8	34.6	26.5
Cu, mg kg^{-1}	**4.10±1.6**	3.50±0.5	3.60±0.4	4.2	3.67
Mg, mg kg^{-1}	**1147.0±88.0**	1101.0±40.0	1361.3±152.7	900	1100
Fe, mg kg^{-1}	**40.4±8.5**	39.3±5.5	44.5±0.6	53.7	26.3

Table 2 Comparison of characteristics of *Kornelija barley and other cereals*

The Table 2 reveals competitiveness of *Kornelija* compared to other cereal varieties, as well as compared on average in barley: higher protein, dietary fiber and β-glucan content in grains, high levels of vitamin E, total phenolic compounds, and high DPPH (2,2-diphenyl-1-picrylhydrazyl) antiradical

activity, variety of advantages in the grain processing industry **especially for the manufacture of dietetic products**.

Thanks to the above-mentioned unique properties and grain quality, the Kornelija barley variety, even at relatively lower yields and higher purchase prices, is able to provide the **most economically advantageous price of grain-derived protein and beta-glucan** (ref. to Figure 1). It must additionally be noted that the unique properties of grain allow the production of high value-added products, offsetting the relatively higher purchase prices of grain.

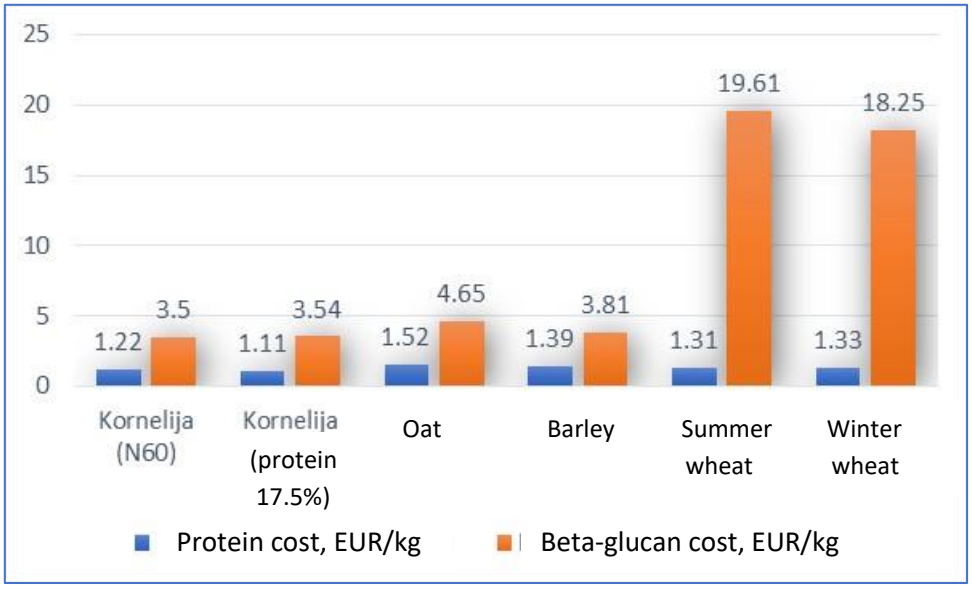

Figure 1 Price comparison of protein and beta-glucan

Kornelija barley variety provides the grain processor with a purchase price of protein at least 12% lower than average on other barley varieties and 20% lower than on oats. In terms of protein costs, spring wheat is the closest, but the cost of beta-glucan varies by 6-fold. Simultaneously, barley variety *Kornelija* is able to ensure the presence of both these essential elements and the most cost effective combination of the acquisition price.

More information can be found in the Research section.

Kornelija team