SUGAR PROFILE OF ORGANIC AND CONVENTIONAL MAIZE GRAINS



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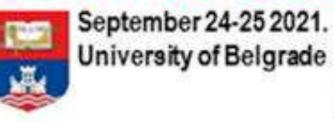
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There are plenty of research articles which emphasised divergences in nutrients content between organic and conventional food products.

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Corn

RESULTS

The obtained results (content of pentoses, hexoses, non-reducing and reducing disaccharides) are expressed as % of total soluble sugars.

possible determine differences order between maize grains grown under organic (OM) and conventional (CM) production system sugar profile was determined by HPLC-RI analytical technique. For that purpose two samples of the Rumenka maize (Zea mays) variety were used. Samples were grown and collected at the experimental field of Maize Research Institute (Zemun Polje, Serbia) during three seasons (2015 - 2017).

AIM OF WORK AND METHODS

Sugars %	Pentoses	Hexoses	Non-reducing disaccharides	Reducing disaccharides	Total
OM15	1.29±0.047 ^{ab}	1.74±0.075 ^a	1.54±0.043 ^{ab}	0.6±0.014 ^a	5.18
OM16	1.27±0.057 ^{ab}	1.5±0.058 ^b	1.67±0.083 ^a	0.59±0.027 ^a	5.04
CM16	1.11±0.044 ^{ac}	1.84±0.118 ^a	1.43±0.074 ^{bd}	0.76 ± 0.039^{b}	5.15
OM17	1.08±0.069 ^{ac}	0.84±0.064 ^c	1.51±0.069 ^{abd}	0.48±0.037 ^c	3.91
CM17	1.48±0.125 ^b	1.07±0.049 ^d	1.17±0.077 ^c	0.38±0.029 ^d	4.1

OM17aat	1±0.089 ^c	0.82±0.057 ^c	1.45±0.064 ^{bd}	0.4±0.016 ^d	3.67			
CM17aat	1.13±0.118 ^{ac}	0.87±0.044 ^c	1.33±0.051 ^{cd}	0.39±0.026 ^d	3.72			
* aat - accelerated ageing test								

The content of total individual sugar was in range from 3.91% (OM-17) to 5.18% (OM-15). The lowest content of pentoses was recorded in organic maize from 2017 (1.08%) while the highest content was in conventionally grown grain (1.48%) from the same year. Hexoses content was in range from 0.84% (OM-17) to 1.84% (CM-16). Regarding disaccharides content it was observed that non-reducing disaccharides (1.17 (CM-17) -1.67% (OM-16)) were more represented compared to reducing disaccharides (0.38 (CM-17) - 0.76% (CM-16)).

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CONCLUSION

Maize

The content of hexoses significantly differs (p < 0.05) between grains from applied production systems during all seasons as well as the pentoses content from 2017. In both cases it was higher in conventional grains. Organic maize was a better source of non-reducing disaccharides (seasons 2016 and 2017) compared to conventional samples. Additionally, seasonal variation (2016/2017) in content of reducing disaccharides was observed in conventional maize grain.