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Czech J. Food Sci.

Šubarić D., Babić J., Lalić A., Ačkar Đ.,

Kopjar M.:

Isolation and characterisation of starch from different barley and oat varieties

Czech J. Food Sci., 29 (2011): 354-360

Starches were isolated from three oat (Dzoker, Zvolen and Sampionka) and three barley (Barun, Zlatko and Vanessa) cultivars. The gelatinisation and retrogradation characteristics, pasting properties, swelling power, and solubility of the isolated starches were analysed. The gelatinisation onset temperatures varied from 59.4 ° C to 61.4 ° C for the oat starches (OS), and from 58.4 ° C to 62.2 ° C for the barley starches (BS). BS displayed a higher retrogradation enthalpy (Δ*Hr*) than OS after 7 and 14 days storage at 4 ° C. OS-Sampionka had the lowest one while BS-Vanessa had the highest Δ*Hr* after 7 and 14 days of storage. Significant differences in pasting properties were observed

between the OS and BS. OS showed higher values of maximum viscosity than BS and followed the order: OS-Dzoker > OS-Sampionka > OS-Zvolen > BS-Vanessa > BS-Zlatko > BS-Barun. The breakdown viscosities of BS were considerably lower than those of OS. OS had higher swelling power and solubility values than BS. The higher swelling and solubility values of the oat starches in conjunction with lower retrogradation suggest different applications of these starches. The results showed that, while the barley starches are suitable for such applications where high stability is needed during heating and shearing (low breakdown values), the oat starches have a great potential for the applications where high stability during storage is needed (low ΔHr values). In addition, the barley starches are suitable for those applications where high water binding is undesirable, while the oat starches are applicable where low amounts of starch need to bind high proportions of water

Keywords:

oat; barley; isolation; starch properties

[fulltext]