

P-106: Effect of ozone treatment in wheat quality of whole grain wheat flour

ABSTRACT



Monday, October 09, 2017 04:00 PM - 05:00 PM

TC CC - Grand Hall

Grain ozonization is a technology which has been applied to improve wheat sanitary quality during storage, especially to degrade toxins like deoxynivalenol (DON). On the other hand, wheat in the form of whole grain flour has been more used in human food, in spite of having few studies as for the consequence of ozone in its functionality. Thus, the objective of this work was to investigate the effect of ozone treatment in the technological quality of whole grain wheat flour (WGWF). The wheat samples, two with hard texture and other two with softer ones naturally contaminated with DON were conditioned using ozonized water (3.5 mg O₃/L) following the processing normal flowchart. The samples conditioned to water without ozone were used as control. Grain characteristics were determined in SKCS (single kernel characterization system) and the WGWFs were evaluated by physico-chemical (flour color and damage starch) and rheological analyses (alveography, 50g bowl farinography, and Mixolab) using AACC International Approved Methods, except flour color performed in colorimeter, using CIE L*a*b* color space, following manufacturer instructions. Hardness index, weight and diameter of grain in SKCS were not significantly altered by ozone treatment, as well as color, damage starch content and viscoelastic properties (alveography) of WGWFs. In spite of lower values for water absorption in farinograph (ranging from 63.60 to 73.45%), and in Mixolab (ranging from 59.80 to 68.50%), with average decrease of 2.88% and 2.96%, respectively, the other parameters of mixture properties improved in the ozonated flour samples, as observed by higher values for the parameters: dough development time in farinograph (ranging from 2.40 to 8.75 min) and in Mixolab (ranging from 2.79 to 9.24 min), with average increase of 2.94% and 13.04%, respectively, stability in farinograph (ranging from 4.00 to 9.25 min), and in Mixolab (ranging from 7.26 to 10.50 min), with average increase of 27.74% and 31.57% respectively, and lower values for mixture tolerance index parameter in farinograph (ranging from 27 to 67 UF) and in Mixolab (ranging from 0.554 to 0.949 Nm) with average decrease of 16.82% and 10.10%, respectively, after ozone treatment. So, the results were promising, showing that technological quality can be enhanced by using ozone.

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