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Abstract

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Comparison Between Potassium Bromate and Ozone as Flour Oxidants in Breadmaking

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The objective of this research was to compare the efficacy of potassium bromate with that of ozone treatment in wheat flour oxidation for breadmaking. In the first experiment, flour was treated with ozone at 1,500 ppm for 2, 4.5, 9, and 18 min. In the second experiment, flour was fully treated with ozone at 1,500 ppm for 45 min and then blended with control flour at concentrations of 10–30% (w/w). Flour became whiter and less yellow as ozonation time increased when compared to control flour. Size-exclusion HPLC detected an increase in SDS buffer insoluble polymeric proteins in flour exposed to ozone. Bread made from flour treated with ozone for 2–4.5 min and bread that was made from flour blended with fully ozonated flour at 5 and 10% (w/w) was not significantly different for specific volume when compared with bread made with flour containing potassium bromate. Bread made from flour treated with ozone for 2, 4.5, and 9 min had a greater number of cells in crumb with larger loaf volumes than control flour. Results indicate that ozone treatment of flour could eliminate the need for potassium bromate in breadmaking.

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