



Effects of Thermal Processing of Low Heat Nonfat Dry Milk in Bread

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The advances made in the production of bread can be traced back as early as 450 BC when the Egyptians produced leavened bread and sour dough. The current bread making formulation involves high heat treatment of nonfat dry milk (HH-NDM). When low heat NDM was subjected to radio frequency dielectric heating (RFDH), it showed improved foaming properties and maintained its solubility in model systems; thus, a research question would it impact the air bubbles in bread. Previous research has shown the foaming properties of RF-NDM contributing to improvements in the functionality of NDM in bread. The significance of this study is to understand the effects of radio frequency (RF) treated low heat nonfat dry milk in bread. The materials used were Sunbeam Breadmaker model 5841, water, butter, sugar, nonfat dry milk, bread machine instant yeast, and bread flour. The percentages of each ingredient were determined by using the American Association of Cereal Chemists (AACC 44-15.02.) international method, but reduced in overall quantity to conform with the Breadmaker instrument. The four types of bread loaves produced were HH-NDM, LH-NDM, RF-LH-NDM at ninety minutes and RF-LH-NDM at 180 minutes. Breads were evaluated for bread crumb firmness, bread crumb color, bread crust color, volume and firmness. The Rapeseed Method (AACC 10-05.01) was used to assess volume. The MiniEZ Scan was used to test for the color of both crumb and crust. The Texture Analyzer was used to test for bread firmness. The Farinograph was used to test for the dough strength consistently. The testing results showed that there were differences in volume, firmness in bread as well as development time of the dough as a function of the NDM used in the formulations.

