Title Study of the decay process in various fruits using NMR and MRI

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Abstract

The paper studies the relationship between water migration and the state of water and texture of bread during storage using nuclear magnetic resonance (NMR). The effects of added soy proteins of bread were evaluated. The results show that NMR spin lattice relaxation time T1 was closely related to short term retrogradation while NMR spin spin relaxation time T2 was a good indicator of staling, and water mobility and migration within the system. NMR parameters were also found to correlate well with the changes in textural properties during storage; in particular, the T21 has a very good correlation with the hardness of bread, the changes of bread mass also have a good correlation with proton density. It was found that in the four different formulations of bread the minimum correlation coefficient was 0.94 ($P < 0.01$) and the repeatability is also very good. It can be provided a good way to evaluate the aging of bread by the value of T21. Experimental results show that changes of bread mass has a good correlation with proton density, the correlation coefficient are all above 0.918 ($P < 0.01$), linear equations for the firmness and the bread weight (W), T21, and proton density A(T21) was obtained, Y (firmness) = 4.426722046T21-36.3471935W+0.001845621A(T21)+1683.509 Relevance 0.993 ($P < 0.01$)