

434k Effect of Buffer, Residual Lactose, Salt to Moisture Ratio and Storage on the Linear Viscoelastic Properties of Cheddar Cheese

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Cheddar cheese is a viscoelastic material and the protein network structure is the main factor in affecting the viscoelastic properties. During storage the linear viscoelastic properties changes continuously due to the changes occurring in the protein network in the cheese. The objective of this study is to determine the changes occurring in the linear viscoelastic properties of Cheddar cheese during storage. Eight different cheeses were prepared with two levels of buffer content, two levels of lactose content and two levels of salt to moisture ratio and stored at $5 \pm 1^\circ \text{C}$ for 8 months. The linear viscoelastic properties of cheddar cheese were studied at 0,1,2,4,6 and 8 months of storage using ATS Rheosystems Visco analyzer. The stress sweep, frequency sweep and creep and recovery tests were performed on eight different types of cheddar cheese at a constant temperature of 20°C with 2mm thick and 23mm diameter samples. During frequency sweep tests conducted at a constant shear stress of 750 Pa significant difference in the low frequency storage modulus(G') and loss modulus (G'') between the buffer level, lactose level, salt to moisture ratio and storage period were observed at $P < 0.05$. The low frequency storage modulus and loss modulus were found to be decreasing as the storage period increases for all the eight different treatments of Cheddar cheese. There was significant difference in the creep and recovery compliances between the levels of buffer, levels of lactose, levels of salt to moisture ratio and storage period was observed at $P < 0.05$. During storage the interaction effect of storage period with all the three factors were found to be significant.