



## NUMERICAL SIMULATION OF YOGURT VISCOSITY DURING FERMENTATION

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### **ABSTRACT**

In this study, a numerical simulation approach is presented to model the viscosity of yogurt during fermentation, using MATLAB and its ODE45 solver. Fermentation is an important process that affects the rheological properties of yogurt, in which lactic acid bacteria plays a key role in changing the physical structure from liquid milk to a thick and viscous product. The simulation is based on a set of differential equations that describe the kinetics of bacterial growth, lactose fermentation, and acid production, which collectively affect yogurt viscosity. Using the ODE45 solver, a powerful tool for solving ordinary differential equations, the aim was to accurately predict the viscosity change in time during fermentation. This simulation provides valuable insights for optimizing fermentation parameters and achieve the desired yogurt texture and consistency. Additionally, results can contribute to the improvement of dairy product quality and production efficiency.

*Keywords: Yogurt, viscosity, numerical*