

Process control of pink guava puree pasteurization process: Simulation and validation by experiment.

Abstract

Recently, process control has been applied extensively in many food processes include pasteurization process. The purpose is to control and maintain the product temperature at desired value. In order to be able to control the process properly, the model of the process needs to be obtained. This research aims to obtain the empirical model and to determine the best control strategy in pasteurization process of pink guava puree. The PID controller tuned by different tuning methods was simulated using Simulink and closed loop responses were observed. Simulation results revealed that PID controller tuned by minimizing of integral absolute error (IAE) method were satisfactory adaptable in this process in term of faster settling time, less overshoot, smallest values of IAE and ISE that less than 1. Then, experiment was performed using this method in order to validate simulation results. In general, a good agreement was achieved between experimental data and dynamic simulation result in control of pasteurization temperature process with $R^2=0.83$. As the conclusion, the results obtained can be used as the recommendation for a suitable control strategy for the pasteurization process of pink guava puree in the industry.

Keyword: Ppasteurization; PID controller; Simulation.