

## Mathematical Model to Determine Specific Heat of Liquid Food Products using Heat Exchanger

C P Rupasinge\* and T D S Nilangi  
University of Ruhuna, Sri Lanka

The thermal properties of food product must be understood for the successful process design in food industry. The specific heat is one of the important thermal property of food industry to calculate the required heat content applied in the food processing chain.

The main objective of this study was designing a simple heat exchanger for measuring the specific heat of liquid foods in laboratory condition. Distinguish the relationship of specific heat and dry matter percentage of liquid food product and develop the mathematical model. Different concentrations of sugar, milk and papaya pulp (10%-50%) were prepared and heated until reach 80 – 90°C temperature. Products moved through the heat exchange. Data were recorded in continuous flow condition of heat exchanger. Develop the relationship in between specific heat and dry matter content.

According to the results there is a strong negative correlation between specific heat and dry matter percentage in different concentration of specific food sample. The formula was developed using result of specific heat and dry matter.

### Biography:

Ms C P Rupasinghe is serving as senior lecturer (Grade I) attached to Department of Agricultural Engineering, Faculty of Agriculture, University of Ruhuna, Sri Lanka. She completed her Master of Science in Agricultural Systems and Engineering, Asian Institute of Technology, Bangkok, Thailand. She was awarded by Scholarships; JICA from Government of Japan, NORAD from government of Norway, Australian Leadership Awards Fellowship Program by Australia and two NFP Fellowships from Netherlands. Many research studies are done for solar energy utilization for photo thermal application in food preservation. She is serving as a member of national committees of Post-Harvest technology and Sustainable Consumption and production to achieve sustainable development goals in Sri Lanka.