Abstract

A mathematical model for expressing palm oil was developed using the properties of the fruit and based on previous work on seed‑oil expression. Linearisation of the theoretical model developed was carried out by using empirical expressions for flow parameters such as permeability, viscosity and pressure–porosity relationship. The general equation developed was solved numerically using MatLab. The model was validated by comparing the experimental and predicted oil yield recovery at combinations of sterilisation time (30, 60 and 90 min), digestion time (3, 5 and 10 min) and expression pressure (0.5, 1.0 and 1.5 MPa). The result indicated that generally, both the measured and predicted oil recovery increased with increasing sterilisation time, digestion time and expression pressure. The model had an overall deviation between the predicted and measured values of about 5%.