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Modelling Kinetics of Colour Degradation in American Pokeweed (Phytolacca americana) Extract Concentration

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Abstract : The kinetics of colour changes of American Pokeweed extract, due to concentration by various heating methods was studied. Three different heating/evaporation processes were employed for production of American Pokeweed extract concentrate. The American Pokeweed extract was concentrated to a final 40 °Brix from an initial °Brix of 4 by microwave heating, rotary vacuum evaporator and evaporating at atmospheric pressure. The final American Pokeweed extract concentration of 40 °Brix was achieved in 188, 216 and 320 min by using microwave, rotary vacuum and atmospheric heating processes, respectively. The colour change during concentration processes was investigated. Total colour differences, Hunter L, a and b parameters were used to estimate the extent of colour loss. All Hunter colour parameters decreased with time. The zero-order, first-order and a combined kinetics model were applied to the changes in colour parameters. All models were found to describe the L, a and b-data adequately. Results indicated that variation in TCD followed both first-order and combined kinetics models. This model implied that the colour formation and pigment destruction occurred during concentration processes of American Pokeweed extract.

Keywords : American pokeweed, colour, concentration, kinetics
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