

339a Salt Diffusion into Vegetable Tissue as a Pretreatment for Ohmic Heating

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Ohmic heating has shown significant promise in a number of food processes, including sterilization and pasteurization. In ohmic heating, food material heats internally when electric current is passed through it. In an ohmic heating process for particulate foods most desirable situation is that in which the electrical conductivities of fluid and solid particles are equal. In practice, most vegetable solid particles are of lower electrical conductivities than liquids, for particulate foods. An increase in ionic content within the solid food can be achieved by salt infusion.

The objectives of this research were to determine the equilibrium distribution coefficients and diffusion coefficients of salt (sodium chloride) into vegetable (water chestnut) tissue in an infusion process. Infusion studies were performed at 25, 40, 60 and 85 °C, using 5, 7.5 and 10% (w/w) salt solution in distilled water. Equilibrium distribution coefficients were independent of temperature and salt concentration. For the conditions studied, the diffusion coefficients were unaffected by brine concentration, but increased with the temperature.