

Title Electrostimulated thermal permeabilisation of potato tissues
Author N.I. Lebovka, M.P. Kupchik, K. Sereda and E. Vorobiev
Citation Biosystems Engineering, Volume 99, Issue 1, January 2008, Pages 76-80
Keywords potato; thermal permeabilisation

Abstract

The effects of low-temperature permeabilisation at 50 °C stimulated by a preliminary electric field treatment were studied for potato tissues. The electric field treatments were carried out using an alternating electric field at 50 Hz with a moderate electric field strength between 30 and 80 V cm⁻¹. The degree of tissue damage was estimated from conductivity measurements. The combined electric and thermal treatment was shown to accelerate the tissue damage and to decrease the time of low-temperature permeabilisation at 50 °C approximately to 1 h. The increase of electro-stimulated damage surprisingly resulted in slowing of the kinetics of thermal damage. Both the minimal time of thermal damage and the optimal time of preliminary electric treatment noticeably decreased with an increase of the electric field strength.