

Title Impact of PEF treatment on quality parameters of white asparagus (*Asparagus officinalis L.*)

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Abstract

Pulsed Electric Field (PEF) application on white asparagus (*Asparagus officinalis L.*) was exercised to examine influence of electroporation on spear characteristics as composition and texture. PEF treated spears showed altered storage behaviour, which was noticed by increased mass transfer as higher water loss as well as the decrease of the Maillard reaction substrate glucose. Cell disintegration measurement revealed significant influence of electric field orientation on electroporation. Since the anisotropy of asparagus tissue, PEF processing in longitudinal direction of the spear axis resulted in 9.06% higher cell membrane permeabilization than treatment in transverse direction. Furthermore, total solids inclusive lignin content were measured to obtain textural improvements of asparagus spears. It could be shown that dry weight as well as the amount of lignin was reduced after PEF implementation. Lignin degradation (-2.4%) might be attributed to the PEF induced interference of electrostatic dipole–dipole interactions between lignin and cellulose and subsequent delignification.