

Author: [ADVANCED](#) | Volume Page
Keyword: |



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1881-3976

PRINT ISSN : 1341-7592

Food Science and Technology International, Tokyo

Vol. 1 (1995) , No. 2 pp.77-81

[\[PDF \(472K\)\]](#) [\[References\]](#)

Effect of Ordinary Frequency High Electric Fields on Evaporation and Drying

[Fumio HASHINAGA](#)¹⁾, [Ganga Prasad KHAREL](#)¹⁾ and [Ryuichi SHINTANI](#)²⁾

1) Faculty of Agriculture, Kagoshima University

2) Faculty of Science, Kwansai Gakuin University

(Received: May 15, 1995)

Evaporation of water was enhanced by ordinary frequency (60 Hz) high electric fields (HEF), and the effect was directly proportional to the extent of treatment, i.e., increased with time and electric field, and decreased with separating head distance. Alternating current (AC) wire electric field was more effective in promoting evaporation of water than all direct currents (DC) and AC (plate) electric fields. As a result of the higher rate of evaporation, AC (wire) HEF caused a reduction of 1.0°C in the surface temperature in water and 4.5°C in ethanol. Both evaporation rate and surface temperature were resumed after the electric fields were discontinued. Furthermore, the evaporation rates of water and ethanol were equal to the respective controls after 60 min and 100 min of electric field cutoff, respectively. Similarly, HEF was very effective in promoting evaporation even at higher concentration of sugar or salt solutions. Cut discs (size: $\phi 20$ mm \times 10 mm, ca. 174 g, placed 10 mm apart on aluminum-foil) of apple flesh were dried under AC (wire) HEF under ambient conditions (25°C, 35%RH), and the higher the fields, the faster was the drying. After 10.0 h drying, the moisture contents of samples treated with 0.0, 5.7, 7.9 and 10.0 kV alternating electric fields (20 mm head distance) were 4.2, 3.6, 3.4 and 3.1 kg/kg dry solid, respectively.

Keywords: [high electric fields](#), [evaporation](#), [drying](#)

[\[PDF \(472K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

To cite this article:

Fumio HASHINAGA, Ganga Prasad KHAREL and Ryuichi SHINTANI, **Effect of Ordinary Frequency High Electric Fields on Evaporation and Drying** *FSTI*. Vol. **1**, 77-81. (1995) .

doi:10.3136/fsti9596t9798.1.77

JOI JST.JSTAGE/fsti9596t9798/1.77

Copyright (c) 2009 by the Japanese Society for Food Science and Technology



[Japan Science and Technology Information Aggregator, Electronic](#)

