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3P68 - Investigation of bactericidal characteristics in packaged condition in high frequency high voltage pulse sterilization of food

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Many foods are sold in the market at wrapped condition for keeping freshness. It also prevents adhesion of microorganisms after packaging, prolonging expiration date, and preventing food poisoning. However, this effect can not be expected if the microorganisms adhere before packaging. Therefore, we propose to use pulsed electric field to sterilize packaged foods [1]. Pulsed electric field sterilization is unheated process that physically destroys the cell membranes. It can sterilize without adversely affecting the quality of foods [2]. We considered that by choosing adequately the frequency component with the applied pulsed electric field, it is possible to lower the impedance of the package and sterilize the included microorganisms. In this paper, we aimed to apply ultra-short pulsed electric field sterilization to packaged foods and investigated conditions for improving the sterilization effect by the high frequency electric field pulse. Especially, we investigated about the effect of packaging on sterilization rate.

[1] Takato Higuchi, Yoshie Kuramochi, Tukasa Saito, Yasushi Minamitani : "Investigation of non-heating sterilization method of packed fresh foods by pulsed electric field", 2012 IEEE International Power Modulator and High Voltage Conference (IPMHVC), pp.496-499, (2012)

[2] Takayuki Ohshima, Masayuki Sato : "Pulse sterilization - Safe as it is natural -" Japan Cookery Science Journal Vol.36, No.3 pp.136-141 (2003)

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