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Non-thermal effects of moderate electric fields

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The use of moderate electric fields for food processing is an emerging Technology. While the thermal effects of processing foods with electric fields (EF) are widely accepted, the study of non thermal effects of EF on microorganisms, enzymes and nutrients has been controversial and it is not yet fully understood. The inactivation kinetics of *Bysochlamys fulva* is presented being the D values obtained in the presence of the EF (3.27 min) half of those obtained under conventional heating (7.23 min). These results are in close agreement with the few other publications on the subject. Mechanisms such as electroporation are presumably involved but there are no certainties. The observation that a moderate EF reduces the lag phase of a fermentation is probably another face of the same coin worth to be investigated. The effects of an EF on the deactivation kinetics of food enzymes (Lipoxigenase [LOX], polyphenoloxidase [PPO], pectinase [PEC], alkaline phosphatase [ALP] and β -galactosidase [β -GAL]) were also studied. The EF showed an additional effect on LOX and PPO inactivation, where much lower D values were found as compared to conventional heating. In the case of PEC, ALP and β -GAL, no influence was detected. It has been hypothesized that the presence of the EF may disturb the metallic prosthetic groups present in LOX and PPO (and absent in PEC, ALP and β -GAL), thus causing the enhancement of activity loss. The concentration of other nutrients such as ascorbic acid has been shown not to be influenced by the presence of an electric field. These are important issues of food processing and food safety and therefore they deserve the attention of the scientific community. The main aim of this communication is to call for such attention.