

**Title:****Evaluation of Dry Blanching and Microwave Assisted Freezing of Fruits****Authors & affiliations:**

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**Abstract:**

Prior to the common preservation methods like freezing or canning, fruits and vegetables are being blanched in order to inactivate deteriorative enzymes. Both conventional blanching pre-treatments and conventional freezing methods hide drawbacks behind their beneficial impacts on the preservation of those matrices. Conventional blanching methods may require longer processing times, leaching of minerals and nutrients due to the contact with the warm water which in turn leads to effluent production with large BOD. An important issue of freezing technologies is the size of the formed ice crystals which is also critical for the final quality of the frozen food as it can cause irreversible damage to the cellular structure and subsequently to degrade the texture and the colour of the product.

Herein, the developed microwave blanching methodology and the results regarding enzyme inactivation will be presented. In this study mango (*Mangifera indica* L.) was selected as a fruit matrix and three different scenarios were implemented for both High Temperature Short Time and Low temperature Long Time blanching pre-treatments. Moreover, heat transfer phenomena, mass balance, temperature distribution, and enzyme inactivation (such as Pectin Methyl Esterase and Ascorbic Acid Oxidase) of our microwave blanching approach were evaluated based on measurements and computer modelling.

The present work is part of the COLD $\mu$ WAVE project which aims to the development of an innovative environmentally sustainable process for blanching and freezing of fruits and vegetables with improved textural and nutritional quality. The novel concept of Microwave Assisted Freezing as well as the initial results will be presented.

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