

Microwave assisted freezing (MAF) of meat and fish matrices (FREEZEWAVE project)

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Abstract:

Several preservation methods have been investigated, developed and exploited over the last years but freezing still remains one of the most popular among them, which offers fresh-like characteristics on the food matrix after long period of storage. The freezing process of food matrices is affected by their dominant constituent which is water. The final quality of the frozen product depends on the phase transition or the crystallization process of changing water into ice. The size of the ice crystals is critical for the final quality of the frozen food.

During the implementation of the FREEZEWAVE project, a novel more advanced experimental setup was designed and developed for the application of microwave radiation during freezing. The influence of microwave assisted freezing (MAF) on meat and fish matrices under different processing scenarios such as slow or fast MAF for fish and constant or pulsed MAF for meat was investigated. The microstructure of the frozen samples was evaluated with image analysis and positive results were acquired in both food matrices, showing a reduction of the size of ice crystals size.

Sensory tests carried out by TTZ partner showing encouraging results. Further tests are needed to determine the kinetic parameters of quality change during storage under different temperatures.

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