

Volumetric preservation technologies for food quality improvement by retention of sensitive and mitigation of neoformed compounds (VolTech)

(CORNET)

Coordination:	Forschungskreis der Ernährungsindustrie e. V. (FEI), Bonn (Research Association of the German Food Industry)
National Agencies:	<ul style="list-style-type: none"> • AiF - German Federation of Industrial Research Associations, Germany • MPO – Czech Ministry of Industry and Trade, Prague/Czech Republic • FFG – Austrian Research Promotion Agency, Vienna/Austria
Research Associations:	<ul style="list-style-type: none"> • RFC – Regional Food Cluster, České Budějovice/Czech Republic • GLi – Gemeinnützige Lebensmittelinitiative für Österreich Ltd., Linz/Austria
Research Institutes:	<ul style="list-style-type: none"> • Technical University Berlin, Institute of Food Technology and Food Chemistry, Department of Food Biotechnology and Food Process Engineering, Berlin • University of Natural Resources and Life Sciences (BOKU), Institute of Food Technology, Department of Food Science and Technology, Vienna/Austria • University of Chemistry and Technology (VSCHT), Department of Food Chemistry and Analysis, Prague/Czech Republic
Industrial Branch:	<ul style="list-style-type: none"> • Food Processing and Packaging Machinery • Food and Drink Industry
Duration:	2017 - 2019
Volume:	€ 630.735,-- (total)

Aim of the project:

The limit of the conventional heating including thermal preservation is reached especially when treating high viscous and integrally foods. To reach the desired core temperature within the center of a product, long dwell times need to be applied. Hence, this leads to an over-processing of the outer regions of the food and a quality loss occurs (degradation of aroma, texture, color, value-adding components and the formation of unwanted so called food processing contaminants). Further, the long process times result in higher energy consumption. Taking all this into account, the food industry is looking for new ways to

process food in gentler manner while keeping the microbiological safety and creating food that is tailor-made for the consumer, has a high quality and has a long shelf life. One way to reach this aim is the application of high pressure processing with pressures ranging up to 600 MPa in combination with ambient or temperatures above 100 °C (high pressure pasteurization respectively high pressure sterilization). In both cases the product can be directly treated in its packaging. Another technology that results in a direct and homogenous heating of the food is the so called ohmic heating. Using this technology the heat conducting from the outer to the inner food region will not be the limiting factor

anymore. Therefore, quicker and a more homogenous heating can be realized. Currently this process is run prior to the packaging of the food. To make this technology more feasible for the implementation in the industry the development of a direct in-packaging treatment would be needed. Despite diverse applications of high pressure processing and ohmic heating there are still some technical and scientific questions that are not answered yet. One of these issues is the impact of different intrinsic and extrinsic factors on the inactivation mechanisms of vegetative bacterial, bacterial spores, value-adding components, food processing contaminates, under high pressure processing and ohmic heating. The aim of this project is to examine the impact of these factors.

Economic impact:

Overall there is a wide range of economic sectors that could benefit from the project results. Hence the innovative process technologies offer especially SME a broad range of technical activities. This is based on the one hand on the ability to find niches with highly innovative products and on the other hand the mentioned sectors have a very high proportion of SMEs. This is especially true for the food division (98 % < 500 employees).

The project will help the food and drink industry to develop new products. It is expected that the main impact will be for companies producing food puree, liquid food (including food supplements and food for medical purposes), ready-to-eat meals and meat. It will lead to improve the quality of products in terms of toxicology, bacteriology, nutritional, olfactory and sensorial properties and shelf life. Further the project results will thus create more opportunities for the equipment providers. SME of the food and drink industry will benefit from the knowledge and the technical results on the new processes. The project will contribute to improve their competitiveness on both local and export markets. The design of the project has been chosen to cover and tackle all the challenges that need to be dealt with for gaining more knowledge on both technologies and to ensure an uptake of the results by the food industry.

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