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# **HPTS and its effect on production of food processing contaminants and quality-related properties in food in comparison to thermal-only processing**

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High pressure in combination with high temperatures is an innovative and emerging technology to efficiently sterilize low acid food products over a long shelf-life. In this regard it is crucial to inactivate all pathogenic vegetative microorganism and in particular spore former and endospores, respectively. Compared to commercial sterilization techniques, with long dwell times and subsequent extensive heat impact, the additional pressure application enables faster heating and cooling rates and instantaneous heating throughout the whole product. Therefore, a less harsh impact on nutritional and sensorial qualities is generally attributed to the so-called High Pressure Thermal Sterilization (HPTS) by researchers, ideally resulting in a better overall quality of the food product. This work focuses on the comparison of thermal-only sterilization and high- pressure thermal treatment on theoretical basis, particularly affecting microbial stability, selected vitamins and bioactive compounds, colouring pigments, and food processing contaminants. Findings indicate that the additional pressure application can beneficially improve selected quality-related attributes, e.g. reduced formation of food processing contaminants like furan. Consequently, a higher quality product for consumer is attributed. Nevertheless, the research work also revealed that it is not always possible to retain quality attributes in equal measure, regardless of the promising advantages of HPTS. Fine-tuning of the process parameters pressure, temperature and time is therefore mandatory to reach both goals, microbial stability and high quality.