

# **Possible synergism between natural antimicrobial substances and innovative food processing to increase the microbial inactivation: a case study on supercritical carbon dioxide technology**

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## **Abstract**

Supercritical CO<sub>2</sub> (SC-CO<sub>2</sub>) has been investigated as an alternative low temperature method for food pasteurization. The process operates close to ambient temperature, which prevents heat sensitive degradation reactions, thus obtaining the retention of beneficial molecules than from traditional hot processes. The process is product dependent and requires specific optimization studies for each food category. Recently, the use of natural antimicrobial substances, like essential oil, in combination with SC-CO<sub>2</sub> showed a synergism on the inactivation capacity. The combination of the technologies increased the inactivation rate of microorganisms present on the chicken meat. The synergisms is dependent on the antimicrobial substance used and the type of microorganism investigated. These studies are promising for the reduction of the processing time needed to improve the food safety and prolong the storage time of fresh products.