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Nota di contenuto	Dense Phase Carbon Dioxide: Food and Pharmaceutical Applications; Contents; Preface; Contributors; 1 Introduction to Dense Phase Carbon Dioxide Technology; 2 Thermodynamics of Solutions of CO2 with Effects of Pressure and Temperature; 2.1 Introduction; 2.2 Thermodynamics of liquid-vapour phase equilibria; 2.2.1 Calculation of ?; 2.2.2 Calculation of F; 2.2.3 Calculation of the liquid-vapour phase equilibria; 2.3 Application to CO2-H2O system model; 2.3.1 Non-electrolyte models; 2.3.2 Electrolyte models; 2.4 Thermodynamics of

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3 Experimental Measurement of Carbon Dioxide Solubility3.1 Introduction; 3.2 Solubility of carbon dioxide in water; 3.2.1 Definition and brief review of early studies; 3.2.2 Physical properties associated with the phase diagram of carbon dioxide; 3.2.3 Effect of pressure and temperature on carbon dioxide solubility in water; 3.3 Experimental methods for carbon dioxide solubility measurement; 3.3.1 Analytical methods; 3.3.2 Synthetic methods; 3.4 Review of experimental results; 3.5 Conclusions; 4 Effects of Dense Phase Carbon Dioxide on Vegetative Cells; 4.1 Introduction
4.2 Gases used for inactivating microorganisms4.3 Effect of DPCD on vegetative microorganisms; 4.3.1 Effect of DPCD on bacterial cells; 4.3.2 Effect of DPCD on vegetative forms of fungi, pests and viruses; 4.4 Factors affecting the sensitivity of microorganisms to DPCD; 4.4.1 Effect of CO2 physical states; 4.4.2 Effect of temperature and pressure; 4.4.3 Effect of CO2 concentration; 4.4.4 Effect of agitation; 4.4.5 Effect of water content; 4.4.6 Effect of pressurization and depressurization rates; 4.4.7 Effect of pressure cycling; 4.4.8 Effect of microbial type 4.4.9 Effect of initial microbial number4.4.10 Effect of physical and chemical properties of suspension; 4.4.11 Effect of culture conditions and growth phases; 4.4.12 Injured microorganisms; 4.4.13 Effect of combination processes; 4.4.14 Effect of type of system; 4.4.15 Treatment time and inactivation kinetics; 4.5 Mechanisms of microbial inactivation by DPCD; 4.5.1 Solubilization of CO2 under pressure into suspension; 4.5.2 Cell membrane modification; 4.5.3 Cytoplasmic leakage; 4.5.4 Intracellular pH decrease; 4.5.5 Key enzyme inactivation 4.5.6 Inhibitory effect of molecular CO2 and HCO3- on metabolism4. 5.7 Intracellular precipitation and electrolyte imbalance; 4.5.8 Extraction of vital cellular constituents; 4.5.9 Physical cell rupture; 4.6 Characterization of CO2 states and survival curves; 4.7 Quantifying inactivation; 4.8 Conclusions; 5 Effects of Dense Phase Carbon Dioxide on Bacterial and Fungal Spores; 5.1 Introduction; 5.2 Inactivation of bacterial spores by DPCD; 5.2.1 Effect of temperature; 5.2.2 Effect of pressure; 5.2.3 Effect of pH and aw of the treatment medium; 5.2.4 Susceptibility of different bacterial spores
5.2.5 Effects of combination treatments

Sommario/riassunto

"Dense phase carbon dioxide (DPCD) is a non-thermal processing technology, mainly used for pasteurization of liquid foods. It has advantages compared to thermal pasteurization in its potential to preserve the sensory quality and nutrient content of the foods. It also has potential advantages over other non-thermal processes since it is a continuous process, and both the capital costs and operating costs are lower than some other non-thermal processes. The theory, microbial, enzymatic, quality, and process related issues have been researched. However, there is no compilation of all of this accumulated knowledge and know-how in a single volume. Dense Phase Carbon Dioxide: Applications for Food brings into one volume the diverse aspects and the accumulated knowledge regarding DPCD. International experts in the Dense Phase Carbon Dioxide applications to foods have contributed in their areas of expertise to create synergy that clarifies concepts and reveals potential application areas and future direction of research. Positioned as an industry reference book, Dense Phase Carbon Dioxide: Applications for Food will appeal to food scientists, food technologists, food engineers, food safety, quality and production managers; government officials, researchers and regulators; extension specialists; equipment and packaging suppliers; and particularly professionals in the juice, dairy and beverage industries"--