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High Pressure Processing : Technology and applications in food industries

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High-pressure processing, also described as high hydrostatic pressure processing is a non-thermal food preservation technique that inactivates harmful pathogens and vegetative spoilage microorganisms by using pressure rather than heat to effect pasteurization. High-pressure processing utilizes intense pressure in the range of 400 to 900 MPa at chilled or mild process temperatures (< 45°C), allowing most foods to be preserved. In a typical HPP process, the product is packaged in a flexible container (usually a pouch or plastic bottle) and is loaded into a high pressure chamber filled with a pressure-transmitting (hydraulic) fluid. The hydraulic fluid (normally water) in the chamber is pressurized with a pump, and this pressure is transmitted through the package into the food itself. Pressure is applied for a specific time, usually 3 to 5 minutes. The processed product is then removed and stored/distributed in the conventional manner. Food preservation using high pressure is a promising technique in food industry as it offers numerous opportunities for developing new foods with extended shelf-life, high nutritional value and excellent organoleptic characteristics. Compared to thermal processing, HPP results in foods with fresher taste, and better appearance, texture and nutrition. High pressure processing can be conducted at ambient or refrigerated temperatures, thereby eliminating thermally induced cooked off-flavors. The technology is especially beneficial for heat-sensitive products. This paper presents the techniques, critical factors, commercial applications, status of research and the latest developments in high pressure processing of foods.

Biography

S.K.Giri has completed his Ph.D. in Food Engineering from Indian Institute of Technology, Kharagpur. For the last 12 years he is serving Indian Council of Agricultural Research. Presently he is working as Senior Scientist at Central Institute of Agricultural Engineering, Bhopal. He has undergone three months training on Non-thermal processing of foods at Washington State University, Pullman, USA as a visiting scholar. He has published more than 15 research papers in reputed journals.

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