

High pressure preservation technology

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Preservation is a technique of reducing the spoilage of food, improving the keeping quality and enhancing the storage life of the products. There are so many methods of preservation and among them the high pressure food preservation (HPP) technique is a recently originated process in the food industry. High-pressure processing is also referred to as high-hydrostatic pressure processing (HHP) or ultrahigh-pressure processing (UHP). This process is more and more considered as an alternative to traditional preservation methods like heat processing. HPP is a non-thermal process using water under very high hydrostatic pressure to produce packaged foods that are safer, longer lasting, more natural and better tasting. The applied pressure is about 400–600 MPa or 58,000–87,000 psi at chilled or mild process temperatures ($<45^{\circ}\text{C}$). In this technology the product or food packaged in a high-barrier, flexible pouch or container and loaded it in a high pressure chamber. Pressure is created by using high pressure pump and the package is surrounded by a pressure transmitting fluid or water. After holding the product for the desired time at the target pressure, the vessel is decompressed by releasing the pressure-transmitting fluid. Mostly the holding time is 3–5 min at 600 MPa. Approximately 5–6 cycles/hr are possible, allowing time for compression, holding, decompression, loading, and unloading. HPP can preserve food products without heat or chemical preservatives, and its ability to ensure safety and significantly extend refrigerated shelf life has opened new market opportunities particularly in the area of “natural” preservative-free meat products. Hormel Foods, Kraft Foods, Perdue, Foster Farms, and Wellshire Farms are examples of meat processors that have successfully utilized the technology for a variety of ready-to eat, minimally processed meat products. Several sea food processors such as Motivati Seafoods have also employed HPP to improve food safety and shelf life of shell fish with the added benefit of facilitating the removal of flesh from the shell.

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Autoclaving of buffalo milk decreases allergenicity of caseins and whey proteins in mice

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Milk allergy is one of the most important food allergies affecting about 2.4% of infants. It is among most prevalent immunological disorder prevailing in urban societies of developed and developing nations. Further, milk is often subjected to a variety of processing conditions, which alter many immuno-dominant epitopes causing changes in allergenic properties. The aim of present work was to study the effect of milk processing on the allergenicity of caseins and whey proteins isolated from raw, boiled and sterilized buffalo milk samples. Alteration of immune-reactivity of milk proteins of raw, boiled and autoclaved milk was assessed by ELISA and lymphocyte proliferation index. The biological effect was assessed by intraperitoneal sensitizing of Swiss albino mice with caseins or whey proteins isolated from thermally processed milk samples in presence of Alum $\text{Al}(\text{OH})_3$ as adjuvant. The sensitization with milk proteins induced the production of IgE and IgG than those in control group. Maximal lymphocyte proliferation index of 1.72 and 1.99 was seen in raw milk caseins and whey proteins respectively. The stimulation index decreased significantly ($p < 0.05$) in autoclaved milk's casein and whey proteins as compared to raw milk proteins. Caseins and whey proteins obtained from autoclaved milk exhibited significantly ($p < 0.05$) reduced levels of IgG and IgE as compared to raw milk proteins. The results of present study indicate that high temperature heat treatment reduces the allergenicity of caseins and whey proteins.

Biography

Umesh Kumar Shandilya has completed his B.Sc at the age of 20 years from D.N. College, Hisar affiliated to Kurukshetra University and graduated his M.Sc (Biochemistry) at 22 years from Maharshi Dayanand University, Rohtak, India. He has been awarded with Gold Medal for M.Sc. program. He is pursuing Ph.D. from National Dairy Research Institute, Karnal, Haryana. He has been awarded with INSPIRE Fellowship for PhD studies. He has published 6 papers in reputed journals.