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Application of high pressure processing in food industry

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High pressure processing is one of the food processing methods which has wide scope in the food industry. It is a non-thermal food processing method that subjects liquid or solid food to pressures between 50 and 1000 MPa. It inactivates microorganisms and enzymes, denatures proteins, fortifies hydrogen bonds and disrupts non covalent bonds. High pressure processing preserves texture, colour, food quality, maintains freshness, prevents microbial spoilage and extends shelf life of food products. Moreover, the process is independent of size and shape of food products. It can be used for processing of fruits, vegetables, meat products, sea products etc. This technology is eco friendly and does not generate any waste but the cost of equipment is very high. The operating principles of high pressure processing, packaging requirements, effects on food quality and effects of microorganisms are reviewed.

Biography

Chan Sulthana has completed B.Tech. (Food Technology) from Acharya NG Ranga Agricultural University, India and doing MABM in the same university. She attended many conferences and seminars and presented technical papers.

Downstream processing of xylanase from *Aspergillus niger* using aqueous two phase extraction

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Xylanases, belong to the class of hydrolases, catalyze the hydrolysis of xylan into xylose. There is an increase in demand for xylanases because of its various applications such as bread making, bleaching of pulp, environmental bioremediation and clarification of juices, beer and wine. So far xylanase has been purified using methods such as precipitation, dialysis and different types of chromatography. All these methods involved high cost materials besides considerable loss of enzyme. In the present work, purification of xylanase from *Aspergillus niger* was carried out by aqueous two phase extraction (ATPE) using polyethylene glycol (PEG)/ salt systems.

The objectives of the present work are to study the effect of process parameters such as phase forming salt, molecular weight of phase forming polymer, concentrations of salt and polymer on the partitioning behaviour of xylanase during the ATPE. PEG2000/Mg_2SO_4 system was found to be the best system wherein the recovery of xylanase was around 64.7% with 6.8 fold enrichment. The effect of polymer and salt concentrations have been studied and found that 20% polymer and 10.5% w/w salt concentrations showed best results with 52.3% recovery of enzyme and 12.9 fold purification. In order to recover the enzyme from polymer rich top phase precipitation has been carried out using PEG 6000. The recovery of enzyme after precipitation was found that around 40% with 13.5 fold purification. SDS-PAGE has been carried out to examine the homogeneity of the target enzyme.