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Effect of pH and temperature on the hydrolytic activities of some commercial endo-proteinases

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Endo-proteinases are enzymes that break down proteins into smaller peptide fragments and are commonly used for the production of bioactive peptides (BP) from protein sources. Some studies were carried out to characterize endo-proteinases, including trypsin, pepsin, alcalase, papain, bromelain, and microbial proteases, as well as to optimize the bioconversion conditions, such as the ratio of enzyme: substrate, pH, temperature, and reaction time, to produce peptides with special characteristics. In this study, the effect of various parameters on the proteolytic activity of commercial proteases from Streptomyces griseus PSG type XIV, Bacillus licheniformis PBL type VIII, and Bacillus licheniformis PB type XXIV was investigated. The optimum pH and temperature were determined to be pH 8.5 for PSG, pH 9.5 for PBL, and pH 10 for PB at 60°C with an incubation time of 10 minutes. The optimum temperature for these preparations was 60°C. Different ratios of enzyme: substrate given the different spectra of oligopeptides. Our preliminary results can serve as a good base for designing and realizing bioprocesses for protein hydrolysate production.

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Variation of the gas diffusion rate by changing the microperforation area of the packaging foil in modified atmosphere packaging

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Modified atmosphere packaging is a widely researched area in food science. The packaging of fruit and vegetables at a minimum processing level, such as fresh-cut, poses a number of challenges for the food industry. As the fruits are still alive after harvest, they need to be packaged with a certain degree of gas exchange. In our research, we investigated the gas diffusion rate of gas molecules (CO2, O2) using microperforations (gas exchange holes) of different sizes. In general, the packaging technology is determined by the size of the gas exchange area on the film, the temperature and the respiration intensity of the packaged crop. In order to develop an accurate technology, laser microperforations were made in the packaging material and the diffusion rate of the tested gases was modelled.