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Cold-active proteases: Production, characterization and applications

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During the past decade, it has been recognized that microorganisms growing at low temperature regions are important for their metabolic contribution in the ecosphere, as well as for their enzymes that provide a wide biotechnological potential, offering numerous economic and ecological advantages over the use of organisms and their enzymes, which operate at higher temperatures.

Cold-active enzymes are characterized by high catalytic efficiency at low and moderate temperatures at which homologous mesophilic enzymes are not active and are thermolabil. These properties of cold-active enzyme are concern for both basic research and industrial application.The application of such enzymes enables lowering of the temperature and shortening of processing times without a loss of efficiency, which results in saving of energy consumption. Hence, they are potentially useful in some industrial applications such as food processing, detergent additives, and biotransformation of chemicals. Thus, it is desirable to search for new source of cold-active proteases with novel properties from as many different sources as possible. This presentation highlights isolation, production optimization, characterization and applications of cold-active proteases produced by bacteria isolated from soil of Gangotri glacier and Antarctica.