

Production and application of biomolecules – from polysaccharides to lectins

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Resumo

Biomolecules are gaining an increasing importance in different applications, from the chemical industry to health, food and environment also included. The application of the full potential of the biomolecules in the development of new bioprocesses and the improvement of the existing ones is, without any doubt, one of the pillars for the sustainable development. Among the several biomolecules, polysaccharides and lectins have been gaining an increasing interest as a result of their interactions that made polysaccharides matrices the preferential technique for lectins purification. However, apart from this particular situation, both polysaccharides and lectins have a wide potential of application in innovative processes. For polysaccharides, the isolation and its characterization from non-conventional sources will be considered together with its application in innovative techniques for food processing, in particular the formation of edible films for food packaging and the controlled release of different molecules in food and biomedical applications. The application of lectins demands its production with a high degree of purity and the preferential use of processes other than the extraction from plants. In this context, the heterologous expression of lectins in bacteria and yeast is of particular relevance. Results on the expression of frutalin (a lactose binding lectin) in the yeast *Pichia pastoris* and its production in bioreactor will be presented. Also, results describing its application as tumor marker and its cytotoxic effect on HeLa cells will be described and compared with the use of frutalin extracted from bread fruit.

Palavras-chaves: polyssacharides, lectins, production, applications