

## EFFECTS OF PEGYLATION ON THE PHYSICOCHEMICAL AND BIOLOGICAL PROPERTIES OF LYSOZYME

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Widely present in nature and well known for its antibacterial activity, lysozyme (E.C. 3.2.1.17) is used in a larger number of applications. The FAO/WHO and many countries have acknowledged the nontoxicity of lysozyme and have approved its use in some foods and for pharmacological and therapeutic applications. Lysozyme (LZ) has received attention as an antimicrobial agent, due to the need to develop new agents able to overcome the increasing levels of bacterial resistance to antibiotics. PEGylation, the process of attaching polyethyleneglycol (PEG) to protein and peptides, improves their pharmacological properties, most often making them more clinically effective. The improved properties include better physicochemical stability. In this study, the LZ was modified by PEGylation with different amounts of activated methoxypolyethyleneglycol (mPEG 5000) rate molar of 0.86, 0.43, 0.21, 0.11. The effect of the PEGylation on the activity and stability of LZ-mPEG 5000 was examined over a wide pH range (4-12). PEGylated lysozyme with lower degree modification (rate molar mPEG/NH<sub>2</sub> = 0.11) procedure conjugate with molecular weight about 30 kDa, enzymatic residual activity 67% on *M. lysodeikticus* and 100% on Glycol Chitosan. This conjugate, presented optimal activity at pH 6.0 and remained stable at 50 °C over a wide pH range (4-12).

Key words: lysozyme, PEGylation, physicochemical stability

Acknowledgements: The authors are thankful for the financial support form the FAPESP.