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His-tag presence modulates enzymatic activity both in solution and at lipid interfaces.

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β-Galactosidase (β-Gal) is an important biotechnological enzyme used in the dairy industry, pharmacology and in molecular biology. This enzyme has a commercial application for lactose hydrolysis in dairy products. Milk processing with β-Gal before milk is commercialized is important to solve nutritional (lactose intolerance) and technological (crystallization of dairy products) problems. In this context, it is important that the activity of β-Gal be evaluated in heterogeneous media.β-Galactosidase (β-Gal) is an important biotechnological enzyme used in the dairy industry, pharmacology and in molecular biology. This enzyme has a commercial application for lactose hydrolysis in dairy products. Milk processing with β-Gal before milk is commercialized is important to solve nutritional (lactose intolerance) and technological (crystallization of dairy products) problems. In this context, it is important that the activity of β-Gal be evaluated in heterogeneous media.

In our laboratory we have overexpressed a recombinant β-galactosidase in *Escherichia coli* (*E. coli*). This enzyme differs from its native version ($\beta\text{-Gal}_{WT}$) in that 6 histidine residues have been added to the carboxyl terminus in the primary sequence ($\beta\text{-Gal}_{His}$), which allows its purification by immobilized metal affinity chromatography (IMAC). In this work we compared the functionality of both proteins and evaluated their catalytic behavior on the kinetics of lactose hydrolysis. We observed a significant reduction in the enzymatic activity of $\beta\text{-Gal}_{His}$ with respect to $\beta\text{-Gal}_{WT}$.

Our studies also focus in studying the activity of both β-Gals in the presence of multilamellar vesicles (MLVs) of different composition. We conclude that the additional positive charges $\beta\text{-Gal}_{His}$ (belonging from histidine residues) promotes the interaction of the protein with negatively charged interfaces favoring the effect shown against neutral interfaces.

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