The Surfactant-Induced Conformational and Activity Alterations in Rhizopus niveus Lipase.

Alam P, Rabbani G, Gamal Badr, Badr BM, Khan RH.

Abstract:

In this study, we have reported the effect of nonionic, anionic, cationic, and zwitterionic detergents on the enzymatic activity and structural stability of Rhizopus niveus lipase. Secondary structural changes were monitored by Far-UV CD which shows that surfactant induces helicity in the Rhizopus niveus lipase protein which was maximum in case of CTAB followed by SDS, CHAPS, and Brij-35. Similarly, tertiary structural changes were monitored by tryptophan fluorescence. We also carried out enzyme kinetics assays which showed that activity was enhanced by 1.5- and 1.1-fold in the presence of CHAPS and Brij-35, respectively. Furthermore, there was a decline in activity by 20 and 30 % in case of SDS and CTAB, respectively. These studies may be helpful in understanding detergent-lipase interaction in greater detail as lipases are used in many industrial processes.

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