Application of a Trypsin-Like Enzyme from Tambaqui (*Colossoma macropomum*) as a Loundry Detergent Additive

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The alkaline protease group corresponds to 50% of the enzyme market, with a broad range of biotechnological and industrial application, such as food, pharmaceutical, leather and detergent. Among aquatic organisms, Trypsin (EC 3.4.21.4) is one of the most studied peptidases and its commercial applications have been recently subjected to many investigations. In this context, the present work aimed to purify a trypsin-like enzyme from the pyloric caeca of tambaqui and test its stability, as well as from two commercial enzymes (Alcalase from Novozymes and a commercial porcine trypsin from Sigma), in the presence of hydrogen peroxide, non-ionic surfactants (Triton, SDS, Tween 20 and Tween 80) and commercial detergents (Ala®, Bem-te-vi®, Omo Multi-Ação® and Minerva®). In the presence of hydrogen peroxide the proteolytic activity of Alcalase, the commercial trypsin and tambaqui trypsin increased 2.5, 1.2 and 1.3 folds respectively. Among the surfactant used, SDS was the only one to inhibit the proteolytic activity from all enzymes tested. The others surfactants did not affect significantly the activity from the commercial and purified trypsins, but they induced the activity of Alcalase to an increase of 3.0 folds. All laundry detergents tested inhibited the activity of the commercial trypsin by 100% after 50 min. However, the same results were not found for Alcalase and tambaqui trypsin, which maintained their activity during the assay. It was observed that the trypsin-like purified from tambaqui is a viable alternative for the application in detergents composition, since it is stable in the presence of surfactants, hydrogen peroxide and various laundry detergents.

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