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## VERSATILIDADE E EFICIÊNCIA NA INOVAÇÃO SUSTENTÁVEL

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## TRANSGLUTAMINASES: INDUSTRIAL PRODUCTION AND APPLICATION

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The Transglutaminase (TGase) is an enzyme which catalyzes transfer reactions of an acyl group introducing covalent crosslinks between proteins, as well as peptides and several primary amines. The action of TGase causes physical changes in the structure of protein-rich food, increasing considerably their aggregated value. The TGase-mediated reactions generate products with the ability to form gels, with new textures and viscosities, besides increasing physical endurance and thermal stability of certain foods. The effects of this restructuring increase the interest in the study and application of transglutaminase in different industrial sectors: dairy, poultry, beef and fish, among others. For decades, animal TGase was the exclusive source of enzyme production. However, the difficult processes of separation and purification, added to the fact that they are  $\text{Ca}^{2+}$ -dependent and the extremely high price of the product, led the efforts in order to produce the TGase by microorganisms. The enzyme production can be carried out in liquid fermentation or in solid state, by using strains of bacilli and actinomycetes, as well as genetically modified microorganisms. The biotechnology team of Embrapa Food Technology has worked in partnership with UFRRJ and UFRJ for producing medallions of salmon using the commercial TGase, and selecting microorganisms to obtain the enzyme and optimize its production. The production of transglutaminase at national level by a microorganism isolated from Brazilian biodiversity creates opportunities for expanding the use of the enzyme in the food processing industry. Financial support: Embrapa, CNPq, CAPES, FAPERJ

Palavras-chaves: Actinomycetes, bacilli, food processing industry, liquid and solid state fermentation, transglutaminases