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Microbial transglutaminase has a lower deamidation preference than human tissue transglutaminase on a celiac disease relevant wheat gliadin T-cell epitope

Recent studies described the deamidation of gliadin through microbial transglutaminase (MTG). In this context, it was also hypothesized that this may have an impact on celiac disease incidence.

We therefore investigated the deamidation and transamidation properties of MTG and tissue transglutaminase (TG2), which deamidates gluten peptides in the gut and is therefore a major player in celiac disease.

Our intention was to provide more information on the basic properties of these reactions using a wheat gliadin peptide as substrate for both enzymes.

We found that generally, MTG is favouring transamidation over deamidation with the latter having a 10 fold slower reaction rate.

For TG2, transamidation is also faster compared to deamidation. However at slightly acidic pH, deamidation is strongly preferred even with an excess of free amine co-substrate.

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