
GLUTEN-DEGRADING ENZYME AND
COCOA EXTRACT SUPPLEMENTATION
AS POTENTIAL STRATEGIES TO
GLUTEN-INDUCED GUT TOXICITY IN
A CELIAC MOUSE MODEL

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ABSTRACT

Gluten-induced gut toxicity is a major recurrent effect that may lead to immunological disturbances. Celiac disease nowadays is suffered by a great number of people and although a strict gluten-free diet is vital, there is a need to instigate other possible therapeutic strategies to diminish its symptoms. In this study, we investigated the effect of the supplementation of a gluten-degrading enzyme and a cocoa extract on the functional, immunological, and morphological gut responses against gliadin intake in both females and males of DQ8-D^d-villin-IL-15tg mice, that represent the best celiac disease animal model. The gluten-degrading enzyme treatment diminished the gastrointestinal gliadin concentration, showing the maintenance of the enzyme degrading functionality in these conditions. The lower levels of gliadin, subsequently led to a less activation of the immune response and, therefore, less intestinal epithelial damage. Furthermore, the cocoa extract, although did not alter the gastrointestinal gliadin content after its ingestion, acted as a protective agent diminishing the anti-gliadin IgA response in the gut. In addition to that, certain sex-dependent effects in this celiac disease model were observed, being females more sensitive -than males- to the gut toxicity induced by the gliadin ingestion. Overall, from this *in vivo* study, we can conclude that the gluten-degrading enzyme could serve as a functional tool to prevent the celiac disease symptoms, and further that some bioactive compounds contained in the cocoa extract could act as anti-inflammatory agents towards gluten sensitivity in the gut.