

PROBIOTICS ACTION ON GLIADIN SEQUENCES RELEVANT TO GLUTEN SENSITIVITY

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The Celiac disease in genetically predisposed individuals is mainly induced by specific repetitive sequences in gliadins (PQPYP). This autoimmune disease stems from the interaction between toxic sequences and lamina propria cells, that is relevant also to other forms of gluten sensitivity. Specific endo-esoprolinase were isolated from lactic acid bacteria, suggesting possible practical applications. The ability of some probiotics at removing "toxic" celiac sequences was investigated, at first by assessing the presence and level of endo- and eso-prolinase activity in some of the most popular probiotic bacteria. Significant activities were detected in *Lactobacillus* and *Bifidum* species, as well as in the probiotic *Escherichia coli Niessle 1917*. On the basis of prolinase data, we investigated by mass spectroscopy the removal of "toxic" sequences in gliadin. A complete disappearance of these sequences was observed only with *Escherichia coli Niessle 1917*. Among the *Bifidus* and *Lactobacillus* species, only *B. bifidum MIMBb23SG* and *L. acidophilus LA5* showed a significant decrease in the "toxic" sequences. All together, this study suggests a potential use of lactic bacteria to lower gluten response in sensitive individuals, including celiacs and gluten-sensitive.