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miR-192-5p and CXCL2/NOD2 inverse correlation in celiac disease

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Celiac disease (CD) is an inflammatory disorder of the small Intestine activated in genetically predisposed individuals by the ingestion of gluten from wheat and related cereals (1). The role of adaptative immunity in CD has been widely investigated. However, also innate immunity can have a role in the development of the disease, and it could involve the alteration of proteins expression (determined either at transcriptional and post-transcriptional level). Post-transcriptional regulation could involve also small non coding RNAs (micro RNA, miRNA). In this study we have analyzed miRNAs expression in duodenal biopsies of controls and celiac patients subdivided into 2 groups (Marsh 3A-B and Marsh 3C) according to the severity of the intestinal lesion. Microarray analysis demonstrated that miR-192-5p is significantly down-regulated in biopsies of Marsh 3C CD patients. Several studies suggested a possible role for miR-192-5p in diseases with alteration of the immune system (2, 3). In this study we identified possible target genes by in silico analysis, including CXCL2 and NOD2, molecules involved in innate immunity. qRT-PCR and western blotting demonstrated that both mRNA and protein expression were higher in CD patients compared to controls. qRT-PCR performed after laser microdissection and immunohistochemistry prove that miR-192-5p and CXCL2 and NOD2 mRNA were present principally in villus epithelium (both in controls and in CD patients) suggesting a direct interaction between miR-192-5p and the two target proteins. In conclusion the results of the present study support the role of miRNAs in regulating the innate immunity in celiac disease.

References

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Keywords

Celiac disease, miRNA, innate immunity, RNA, protein, laser microdissection, immunohistochemistry.