Microvesicles in celiac disease: possible biomarkers and players in gut inflammation.

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Celiac disease (CeD) is an immune-mediated enteropathy triggered by gluten ingestion in genetically susceptible individuals (HLA-DQ2/DQ8). Recent studies have highlighted the possible role of luminal extracellular vesicles (exosomes, microvesicles and apoptotic bodies) in inflammatory bowel diseases, and their possible use as biomarkers of disease progression and response to treatment. However, their role still remains unexplored in celiac disease.

The aim of this study is to evaluate the role of microvesicles (MVs), purified from plasma and intestinal cultured biopsies (ICBs) from CeD patients, as a source of biomarkers and pathogenic players in gut inflammation.

The specific objectives are:

1)To identify biomarkers associated with active CeD by proteomic analysis of MVs purified from plasma of patients.

2)To evaluate the role of MVs purified from ICBs in gut inflammation spreading.

The comparison of proteomic profiles of circulating MVs between CeD patients and healthy subjects showed the presence of desmosomal proteins associated with active celiac disease. To evaluate the MV role in inflammation, 21 days differentiated Caco-2 cells monolayer, as an intestinal *in vitro* model, were treated with purified MVs from the ICB supernatants: MVs from active CeD patients induced a rearrangement of actin filaments, an increase in tissue transglutaminase 2, a decrease in ZO1 expression and an increase of the pro-inflammatory cytokine IL-8, respect to controls.

These preliminary results suggest that MVs, produced during chronic active CeD, may have a role in inflammation spreading and constitute a novel source of circulating biomarkers of the disease.

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