

Technology Offer

Novel Peptide Markers for Celiac Disease

Ref. No.: CH462

Background

Celiac disease is a chronic disease of the small intestinal mucosa resulting from a hypersensitivity to gluten. A number of pathogenic peptide fragments of gluten, the so-called gliadins have been identified so far. The endogenous tissue transglutaminase (tTG) modifies gliadin by transforming the amino acid glutamine in glutamate. In celiac disease patients these tTG-modified gliadins represent the very pathogenic form of gliadin which interact with increased produced HLA proteins and induce complex reactions within the small intestine mucosa and the immune system. As a result autoantibodies against the human endogenous tTG as well as antibodies against the gliadins / modified gliadins are produced by the patients. There exist two *in vitro* diagnostic approaches so far for diagnosis of celiac disease: a) ELISA which detects autoantibodies against tTG and b) ELISA which detects antibodies against gliadin. However, the respective test sensitivities are not yet optimal and the tests are not able to detect IgA-deficient celiac disease patients.

Technology

A novel artificial 31 amino acid-peptide have been generated which is able to bind serum antibodies from celiac disease patients. Using this CDP peptide in an ELISA system, 78% of celiac disease patients can be correctly identified. Furthermore a fusion protein has been developed consisting of the human transglutaminase and the artificial CDP peptide. Using this fusion protein (tTGCDP) in an ELISA system, the sensitivity of the diagnostic test can be further increased on 93% (93% of celiac disease patients can be correctly identified) which is more than 20% higher than the sensitivities of the individual commercial available ELISA-based diagnostics for celiac disease based on gliadin or tTG alone. Furthermore in contrast to state of the art tests, also IgA-deficient celiac patients can be detected (90% of IgA-deficient celiac disease patients are detectable).

Benefits

- ✓ Higher test sensitivity (93%) compared to commercial available diagnostics for celiac disease such as gliadin-based or tTG-based ELISA
- ✓ Also IgA-deficient celiac disease patients can be detected

Application

Diagnosis of celiac disease patients

Commercial Opportunity

In-licensing or industrial cooperation for further development

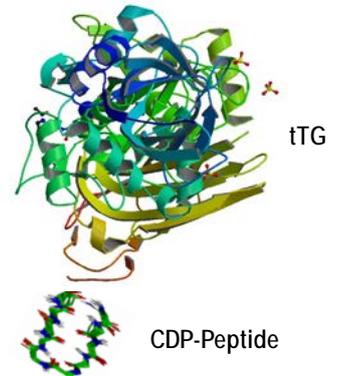


Fig. 1: Fusion protein tTGCDP as a basis for the novel ELISA approach for celiac disease diagnosis. Kindly provided by Dr. Karl Skriner

Keywords

Celiac disease, diagnostic, gliadin, artificial peptide, tTG, transglutaminase, ELISA, fusion protein

Developmental Status

Patient data

IP Status

DE priority patent application (10/2009)
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publication [here](#)

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