

Abstract

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Oxidatively damaged DNA/oxidative stress in children with celiac disease.

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BACKGROUND: Because patients with celiac disease face increased risk of cancer and there is considerable circumstantial evidence that oxidatively damaged DNA may be used as a marker predictive of cancer development, we decided, for the first time, to characterize oxidative stress/oxidative DNA damage in celiac disease patients.

METHODS: Two kinds of oxidatively damaged DNA biomarkers, namely, urinary excretion of 8-oxodG and 8-oxoGua, and the level of oxidatively damaged DNA in the leukocytes, as well as the level of antioxidant vitamins were analyzed using high-performance liquid chromatography (HPLC) and HPLC/gas chromatography with isotope dilution mass detection methods. These parameters were determined in three groups: (a) children with untreated celiac disease, (b) patients with celiac disease on a strict gluten-free diet, and (c) healthy children.

RESULTS: The mean level of 8-oxodG in DNA isolated from the leukocytes and in the urine samples of the two groups of celiacs was significantly higher than in controls, irrespective of diet. There was no statistically significant difference in these parameters between treated and untreated celiacs. The mean plasma retinol and alpha-tocopherol concentration in the samples of untreated celiacs was significantly lower than in treated celiacs.

CONCLUSION: Our results suggest that although diet can be partially responsible for oxidative stress/oxidatively damaged DNA in celiac patients, there is a factor independent of diet.

IMPACT: It is possible that celiac disease patients may be helped by dietary supplementation rich in vitamin A (and E) to minimize the risk of cancer development.

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