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Himali Bhatt
Case Western Reserve University

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Celiac Disease: A Maladaptive Mismatch to Current Lifestyles

-Himali Bhatt-

Himali Bhatt is third year student at Case Western Reserve University. She is currently studying Anthropology with a concentration in Health Science as well as Pre-Medicine. She is also minoring in English and Chemistry. After completing her undergraduate degree, she plans to attend medical school. When not studying, Himali enjoys doing Bharatnatyam and writing.

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ABSTRACT

Celiac disease, an autoimmune disorder, is a maladaptive mismatch between our current lifestyles and diet based upon genetic and environmental factors. It is classified as an autoimmune disorder because it produces an immune response against the intestines in the form of inflammation when an afflicted person's T-cells encounter α-gliadin DQ2 or DQ8 complex (Molberg et al., 2005). Our diets changed as a result of food domestication when we transitioned from nomadic hunters and gatherers to sedentary agriculturalists (Connon, 2005; Rostami et al., 2004). Furthermore, the foods that were grown have become increasingly complex genetically over time, and the DD genome was introduced into a particular strain of bread wheat that may be responsible stimulating T-cells when its α-gliadin fragment binds with DQ2 or DQ8 molecules causing inflammation in the intestine (Molberg et al., 2005). The food domestication hypothesis suggests that it was the domestication of wheat that lead to the emergence and spread of celiac disease. In addition, declining practices of breastfeeding and early weaning of infants in countries corresponds to increasing occurrences of celiac disease in certain countries and earlier ages when symptoms of the disease are now being seen (Connon, 2005; Challacombe et al., 1997; The WHO Global Data Bank). Finally, the age of gluten introduction hypothesis indicates that there is some correlation between the age when gluten is introduced to a child's diet and the child's age of onset of symptoms occurs later in life (Challacombe et al., 1997; Peters et al., 2001). These three hypotheses indicate that the way we now live and some of the foods we now consume have made us more vulnerable to celiac disease, compared to our ancestors (Mysterud et al., 2008), and we may not be as adapted to our modern lifestyle and diet as we originally believed.

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