Consumption of Fructose and High Fructose Corn Syrup: Is Fructositis triggered bronchitis, asthma, & auto-immune reactivity merely a side bar in the Etiology of Metabolic Syndrome II (to be defined)? – Evidence and a Hypothesis.

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Consumption of Fructose and High Fructose Corn Syrup: Is Fructositis triggered bronchitis, asthma, & auto-immune reactivity merely a side bar in the Etiology of Metabolic Syndrome II (to be defined)? – Evidence and a Hypothesis.

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Abstract

Consumption of Fructose and High Fructose Corn Syrup: Is Fructositis triggered bronchitis, asthma, & auto-immune reactivity merely a side bar in the Etiology of Metabolic Syndrome II (to be defined)? – Evidence and a Hypothesis.

A case history and prototype case report provide evidence of allergic reactivity to high fructose corn syrup (HFCS). Ingestion of the sweetener precipitates a cascade of symptoms associated with atypical pneumonitis and respiratory symptomology. Aside from an early onset dry cough, the symptoms do not follow the phenotype most often associated with food borne allergies. The allergic reaction is characterized by symptoms most associated with aero-allergens including bronchial mucus hypersecretion, low grade fever, airway hyper-reactivity, bronchitis triggered asthma, chronic bronchitis, wheezing, allergic rhinitis, eustachian tube dysfunction and inner ear infections. Fructose malabsorption is believed to contribute to the biochemical mechanisms likely involved in the syndrome. The allergenicity of HFCS was discovered during a strict elimination diet in a three to four year old child. Reactivity persists into young adulthood.

The factors contributing to why HFCS has remained an unknown allergen to date are explored including: flu symptom mimicry; the predominant focus by the medical community on native proteins in the main food allergens including peanut, tree nuts, crustacean shellfish, cow's milk, hen's egg, wheat and soy; the inordinate challenges of adherence to an elimination diet given the ubiquitous nature of a food such as HFCS; and the conventional wisdom that aero-allergens trigger respiratory symptomology not foods, and particularly not sugars.

Scientific research available to date indicates that 10% to 30% of “healthy” adults are fructose malabsorbers. Scant research has been done in children. What is available suggests children are at higher risk of being fructose malabsorbers (Riby, et al., 1993). The proposed fructositis hypothesis links the dramatic increases in rates of asthma amongst school aged, preschool and black children since 1984 (Asthma and Allergy Foundation of America (AAFA)), to the concomitant shift from sugar to HFCS occurring during the same time period (USDA). The proposed biochemical mechanisms are that high concentrations of intestinal fructose by those unable to adequately digest and absorb

fructose, leads to modifications and changes in dietary protein fragments (peptides) that turn them into “antigen” capable of triggering an adverse immune response via the AGE/ RAGE pathway (advanced glycation end-products and receptor). Modifications are proposed to occur via the non-enzymatic Maillard reaction, in the high fructose intestinal environment of fructose malabsorbers. The potential roles of IL-6, T helper 17 and gamma delta T cells are explored. Given the ubiquitous presence of HFCS in the US food supply, the fructositis hypothesis and related research raises questions as to its potential role in the many auto-immune diseases recently linked to the AGE/ RAGE pathway including Lupus Erythematosus (SLE), Rheumatoid Arthritis (RA), Irritable Bowel Syndrome (IBS), Inflammatory Bowel Disease (IBD), COPD, Atherosclerosis, Psoriasis and other auto-immune system disorders.

Revision 2. Corrections to current costs of asthma (over $56 billion), pg. 73;
high-fructose foods correction: apples and watermelons, pg.27;
HFCS consumption date corrected from 1980 to 1982, pg. 14.

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