

The debate over neurotransmitter interaction in aspartame usage

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Abstract

Aspartame (NutraSweet®, Equal®) is a widely used artificial sweetener, has been reported to be accountable for neurological and behavioral disturbances in people. Upon ingestion, aspartame is hydrolyzed in gut and provides its metabolite; such as essential amino acid phenylalanine (Phy) (50%), aspartic acid (40%), and methanol (10%). Altered brain neurochemical compositions [such as dopamine (DA), norepinephrine (NE), and serotonin (5-HT)] have long been a concern and being involved in observed neurophysiological symptom (such as headaches, memory loss, mood changes, as well as depression) in aspartame consumers. Aspartames might act as chemical stressor through increasing plasma cortisol level. Aspartame consumption similarly altered gut micro biota. Taken together all this factors, we reviewed to search for convincing evidence, in what manner aspartame metabolites, stress hormones (cortisol), and gut dysbiosis involved in altering brain neurochemical composition. We concluded that aspartame metabolite; mainly Phy and its interaction with neurotransmitter and aspartic acid by acting as excitatory neurotransmitter causes this pattern of impairments. Along with elevated cortisol and gut dysbiosis via interactions with different biogenic amine may also have additional impact to modulate neuronal signaling lead to neurobiological impairments. Hence ongoing research is instantly needed to understand the specific roles of aspartame metabolite, elevated cortisol, and gut symbiosis with emerging neurophysiological symptom in aspartame consumers to improve healthy life in its consumers.

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Biography

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