Essential nutrients suppress inflammation by modulating key inflammatory gene expression

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International Journal of Molecular Medicine 2008; 22(6): 731-741

Chronic inflammation is a complex biological cascade involving multiple substances known as mediators or inflammatory markers that are secreted by white blood cells.

In this study, we evaluated the effects of a specific micronutrient combination on various markers of inflammation. Ibuprofen is the most commonly used drug with anti-inflammatory properties. We compared the effects of the micronutrient mixture and ibuprofen in cells and in animal models after experimentally inducing inflammatory response.

The in vitro results proved that the nutrient mixture was able to decrease the secretion of several inflammatory markers such as interleukins, interferon, cytokines and tumor necrosis factor (TNF-alpha) by an average of 80-90%. In contrast, ibuprofen was only able to reduce these markers by 20-30%.

Cyclooxygenases (COX) are the enzymes that produce prostaglandins, which induce pain, fever and other symptoms of inflammation. The attempts to inhibit COX-2 activity by using drugs have not been successful due to the dangerous side effects they generate; besides which, ibuprofen is not able to effectively inhibit COX-2 enzymes. Our study showed that the micronutrient mixture is highly effective in inhibiting COX-2 expression by 90% and in controlling inflammation by NFkβ, (a protein that acts as an on-off switch for the body’s inflammatory response). The micronutrient mixture was able to suppress activation of NFkβ by 45%.

Moreover, we also compared the efficacy of individual nutrients in this mixture with the efficacy of the entire combination on secretion of prostaglandins and other pro-inflammatory factors. It was clear that the combination had a much greater inhibitory effect than any one component, therefore confirming the synergistic action of these micronutrients on multiple cellular mechanisms of inflammation.

Thus, in addition to being much safer, the micronutrient mixture was able to inhibit various markers of inflammation and the effect was much stronger than ibuprofen.