Influence of Suboptimal Hydration on the Immune Response

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Keywords

Hydration · Hypertonicity · Immunity · Multiple sclerosis

Abstract

Background: A healthy immune system is a subtle orchestration of the innate and adaptive immune systems that efficiently detect and process foreign antigens while tolerating the self. The influence of hypertonicity on the immune system is poorly understood [1–16]. **Summary:** In vitro studies suggest that hypertonicity influences innate and adaptive immunity on several cellular and molecular levels. This influence tends to be pro-inflammatory, but not always. Other cofactors include the duration of exposure to hypertonicity (chronic versus acute), the location in the body, and the timing with priming of the immune system. Recent publications about high salt diet in vitro and in animal models of multiple sclerosis (MS) suggest an influence on the TH17 autoimmune pathway, that does not translate into the human disease in vivo. **Key Messages:** The influence of hypertonicity on the immune system is complex and depends on multiple factors, such as temporality with immune priming and length of exposure. Since findings in animal models did not always translate into human diseases, further studies are needed to specify the consequences of acute or chronic hy-

per-tonicity in healthy subjects or patients with autoimmune diseases such as MS. Further studies need to be conducted in animal models and in humans to better understand the influence of suboptimal hydration on the immune system and on autoimmune diseases, and address its clinical relevance.

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Conflict of Interest Statement

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