

Exertional Heat Stroke: Nutritional Considerations

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INTRODUCTION

Exertional heat stroke (EHS) is a potentially life-threatening illness that typically affects individuals (e.g., athletes, occupational workers) performing strenuous physical activity, often, but not always, in hot and humid environments.

Risk factors for EHS and mitigation strategies have generally focused on the environment, health status, clothing, heat acclimatization and aerobic conditioning, but the potential role of nutrition is largely underexplored

METHODS

This narrative review discusses how select nutritional supplements and dietary strategies commonly used by physically active individuals may protect against, or facilitate the development of, EHS, focusing on the key pathophysiological processes of EHS.

RESULTS

The dietary supplements and practices that impact the pathophysiological mechanisms of EHS, either favourably or negatively, are depicted in Figure 1.

Carbohydrates, proper fluid intake, glutamine and bovine colostrum supplementation can dampen the pathophysiological processes of EHS and may be protective, whereas oral menthol and low energy availability may increase EHS risk.

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RESULTS (CONT'D)

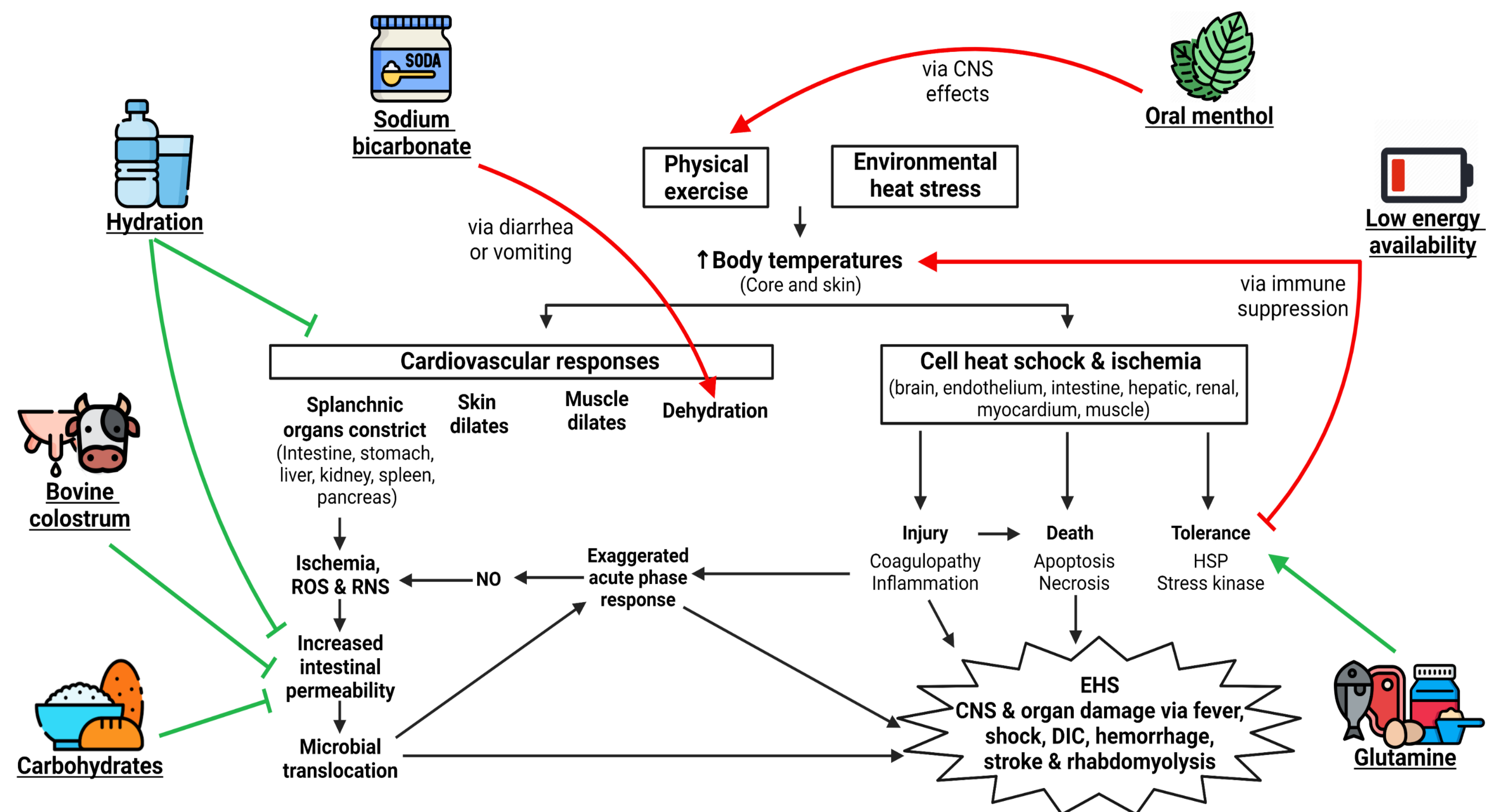


Figure 1. Commonly used nutritional supplements and practices and their impacts on the key pathophysiological mechanisms of EHS. Green arrows represent supplements that can impede the development of EHS. Red arrows represent those that may facilitate the development of EHS.

Note. DIC, disseminated intravascular coagulation. EHS, exertional heat stroke. HSP, heat-shock protein. NO, nitric oxide, RNS, reactive nitrogen species. ROS, reactive oxygen species

CONCLUSION

With climate change expected to increase EHS risk and incidence in the coming years, further investigation on how diet and nutrition may be optimized to protect against EHS would be highly beneficial. In particular, the effects of the nutritional factors both in isolation and in combination on EHS-related outcomes, and the effects of diet and nutrition on EHS in youths, women, middle-aged individuals and multi-ethnic population should be explored.