Influence of a redox-signaling supplement on biomarkers of physiological stress in athletes: a metabolomics approach

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We determined if drinking ASEA™, a redox-signaling molecule beverage, would improve cycling performance, counter inflammation, oxidative stress, and immune dysfunction, and alter the metabolite profile. Cyclists (n = 20) participated in a randomized, double blinded, placebo controlled, crossover study. Subjects completed two 75km time trials (TT) after 1 wk ingestion of 118 mL/d ASEA or placebo (PL). Subjects ingested 473 mL ASEA or PL during the TT. Blood samples were taken pre, post, 1h post-exercise (Ex).
ASEA did not improve TT performance ($p = .95$). The Ex–induced pattern of change in inflammation, oxidative stress, and immunity did not differ ($p>.05$) between ASEA vs. PL. The metabolomic profiles (GC/MS) of ASEA and PL samples were clearly separated by partial least square discriminant analysis when using pre-Ex data ($Q^2 = .71$), and when using the ratio of 1h post–Ex to pre–Ex ($Q^2 = .68$). Linear modeling found that ASEA supplementation caused a significant shift in 43 metabolites pre–Ex, especially free fatty acids, suggesting an enhanced fat oxidation and amino acid sparing, with an increase in ascorbic acid, during Ex. Within the context of this study, 1–wk ASEA supplementation caused extensive fatty acid mobilization before and during Ex, with no apparent influence on TT performance and traditional biomarkers of inflammation, oxidative stress, and immunity.

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