

ASSOCIATIONS BETWEEN ENDOCRINE, IMMUNE, SEROTONERGIC, AND
PSYCHOPHYSIOLOGICAL BIOMARKERS OF STRESS AND GASTROINTESTINAL
SYMPTOMS IN AUTISM SPECTRUM DISORDER

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ABSTRACT

Autism spectrum disorder (ASD) is often accompanied by gastrointestinal (GI) disturbances, which also may impact behavior. Alterations in autonomic, endocrine, and immune system functioning are also frequently observed in ASD, however, the relationship between these findings in ASD is not known. An initial pilot study suggested an enhanced stress response in individuals with ASD and co-occurring GI disorders. In a subsequent multi-site study, we examined the relationship between GI symptomatology, examining upper and lower GI tract symptomatology separately, ANS functioning, and salivary cortisol at baseline and in response to stress in a sample of 120 children with ASD. The stress-associated pro-inflammatory cytokines interleukin-6 (IL-6) and tumor necrosis factor alpha (TNF- α) and whole blood serotonin concentrations were also assessed. Heart rate variability was found to be positively associated with lower GI tract symptomatology at baseline and a greater amount of lower GI tract symptoms was significantly associated with post-stress cortisol concentration. However, symptoms of the lower GI tract were not associated with the stress-responsive cytokines IL-6 and TNF- α . Finally, a significant positive correlation was found between lower GI tract symptoms and whole-blood serotonin. These findings suggest that systems involved in the response to mild stimuli are different in individuals with ASD and co-occurring GI issues, especially for constipation; although it is not possible to assess causality in this data set.