


Ketogenic Diet Shown to Improve Autism Symptoms

 Rady Children's Hospital-San Diego
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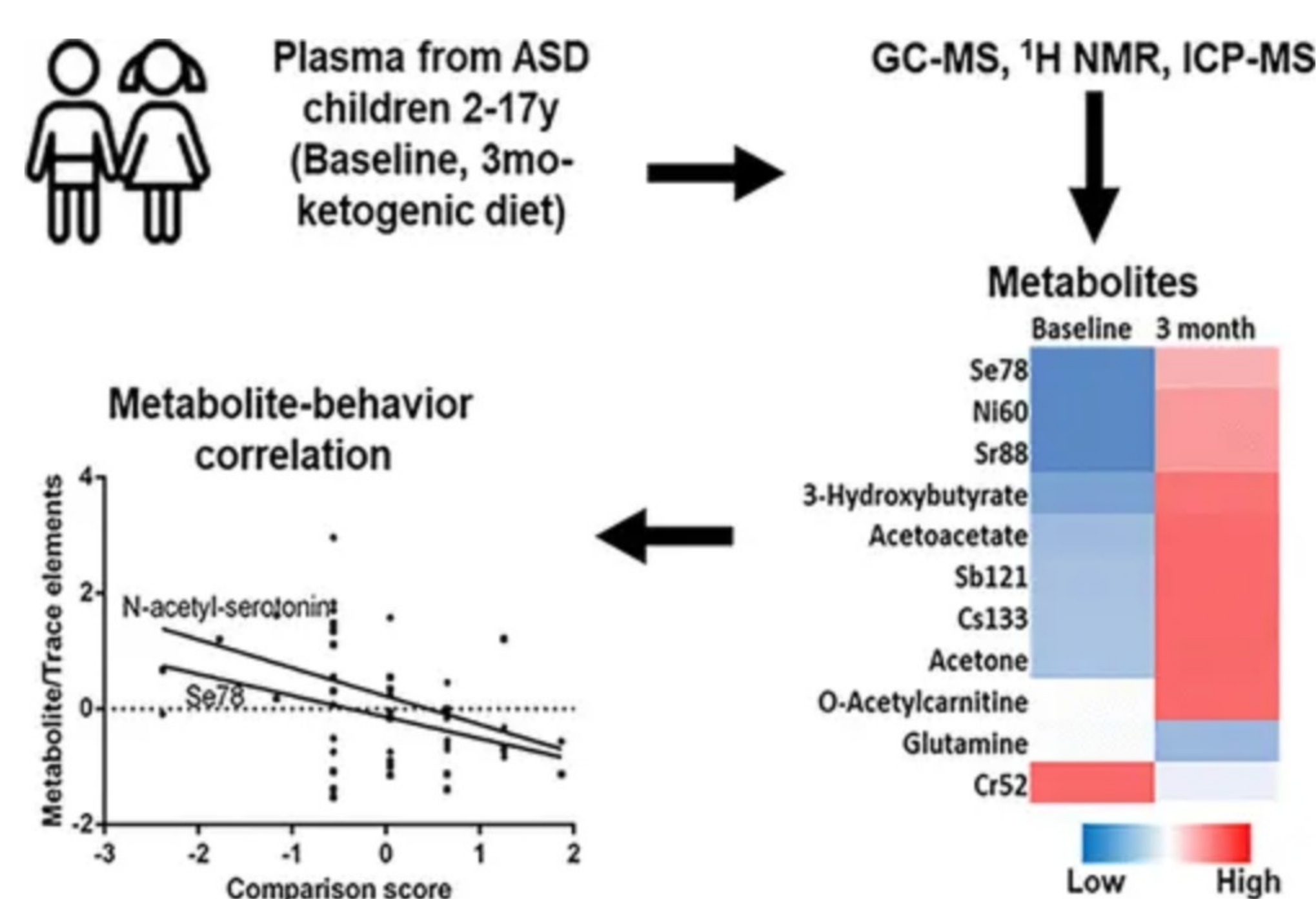
The ketogenic diet (KD) has become a widely accepted therapy for epilepsy, particularly for difficult-to-control seizures. It has also been shown that epilepsy and autism spectrum disorder (ASD) are co-morbid conditions, leading researchers to explore dietary intervention for ASD. Evidence from this research indicates that in some children with ASD, the KD can improve core features.

[Jong Rho, MD](#), chief of the [Division of Neurology](#) at Rady Children's Hospital-San Diego and a professor of neurosciences and pediatrics at UC San Diego School of Medicine, has been studying pharmacological therapies and metabolic approaches toward epilepsy treatment, such as the ketogenic diet, for years. His main research interests are the mechanisms underlying the anti-seizure and neuroprotective effects of the ketogenic diet and its clinical variants. He has also been researching ASD and potential dietary approaches.

Current therapies for ASD focus on co-morbid conditions, such as epileptic seizures and sleep disturbances, and there is no cure for the core symptoms. Studies have increasingly implicated mitochondrial dysfunction in the development of ASD. Meanwhile, the high-fat, low-carbohydrate KD has been shown to enhance mitochondrial function through numerous mechanisms and affect additional molecular targets that may address symptoms and comorbidities of ASD.

[A paper by Dr. Rho and his colleagues published in 2017](#) reviewed the evidence for the use of metabolism-based therapies such as the KD in the treatment of ASD as well as emerging co-morbid models of epilepsy and autism. At that time, the clinical evidence was limited, but results from studies showed promise that metabolic therapy with several different versions of a KD could improve symptoms of ASD and also improve cognition and behavior—the latter benefits of which can facilitate optimal outcomes in ASD. In patients with diagnosed ASD, more than 50 percent of autism patients who received this metabolic therapy showed moderate-to-significant clinical improvement, while the remainder displayed minor improvement.

In a [study recently published](#) in the *Journal of Proteome Research*, a team of researchers involving Dr. Rho sought to investigate how the KD affects the metabolism. This pilot study investigated the behavioral parameters in relation to blood metabolites and trace elements in a cohort of 10 typically developed controls and 17 children with ASD at baseline and following three months of treatment with a modified KD regimen. Based on the different behavior responses to KD, the researchers found that high responders had greater concentrations of 3-hydroxybutyrate and ornithine, with lower galactose.



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The findings enhance the current understanding of the metabolic derangements present in ASD and may be of utility in predicting favorable responses to KD intervention.

[See Dr. Rho's publications on this topic.](#)

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