

## **Chemical in Broccoli May Improve Autism Symptoms**

*Source: Food Product Design*

Broccoli, along with other veggies like cauliflower and cabbage, contain a molecule that new research shows may improve some symptoms of autism spectrum disorders.

Consumer interest is growing in plant-based foods, which has prompted increased awareness of the benefits fruits and vegetables offer. In a recent study, sulforaphane, which was extracted from broccoli sprouts and provided in a daily dose to study participants, showed positive improvements in both behavioral and communication assessments in participants.

However, other components of fruits and vegetables are also gaining recognition, including powerful phytonutrients. For a closer look at phytonutrients and their future in mainstream product development, download the FoodTech Toolbox free Special Report, "A Closer Look at Phytonutrients."

The study, led by investigators at MassGeneral Hospital for Children (MGHfC) and Johns Hopkins University School of Medicine, enrolled 44 young men, ages 13 to 27, who had been diagnosed with moderate to severe autism spectrum disorder. Participants were randomly assigned to a daily dose of either sulforaphane—extracted from broccoli sprouts—or a placebo, with neither investigators, participants nor their caregivers knowing who was receiving the study drug.

Researchers used standardized measurements of behavior and social interaction to assess participants at the outset of the study and at four, 10 and 18 weeks after treatment began. Treatment was discontinued after 18 weeks, and additional assessments of 22 participants were conducted 4 weeks later.

Kanwaljit Singh, M.D., M.P.H., lead author of the study, of MGHfC, the Lurie Center and UMass, said that among the 40 participants who returned for at least one evaluation, the average scores for each of the assessments were significantly better for the 26 participants receiving sulforaphane than for the 14 who received a placebo. Even at the 4-week visit, some caregivers reported a noticeable behavioral improvement, and by the end of the study period, both study staff and family members correctly guessed the assignments of many participants.

Overall, 17 of the 26 participants who received sulforaphane were judged by their caregivers to have improvements in behavior, social interaction and calmness while on active treatment.

After 18 weeks of treatment, the average scores on two assessments—the Aberrant Behavior Checklist and Social Responsiveness Scale—of those who received sulforaphane had decreased 34 and 17 percent, respectively. This indicates improvement in factors such as irritability, lethargy, repetitive movements, hyperactivity, communication, motivation and mannerisms.

Assessments using the Clinical Global Impression scale indicated that 46 percent of sulforaphane recipients exhibited noticeable improvement in social interaction, 54 percent in aberrant behaviors, and 42 percent in verbal communication. Most of the improvements had disappeared by the 22-week reassessment, supporting the probability that changes had been the result of sulforaphane treatment.

However, not everyone who was receiving sulforaphane saw improvements—about one-third has no improvement in symptoms.