

# Down's syndrome 'treated' with green tea: study

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Green tea. Credit: Wikimedia Commons

A chemical in green tea has been shown to improve cognitive ability in persons with Down's syndrome, scientists and doctors said Tuesday.

In a year-long clinical trial, the treatment led to improved scores on memory and behaviour tests, they reported in a study, published in the *The Lancet Neurology*.

The positive impact remained six months after the trial ended.

Brain scans revealed that the compound, called epigallocatechin gallate, altered the way neurons in the brain connect with one another.

"This is the first time that a treatment has shown efficacy in the cognitive improvement of persons with this syndrome," said Mara Dierssen, senior author of the study and a researcher at the Centre for Genomic Regulation in Barcelona.

While significant, she added in a statement, the results should not be interpreted as a "cure".

"But it may be a tool to improve these individuals' quality of life."

Experts not involved in the study described it as "exciting" and "an important piece of work."

At the same time, they cautioned, the findings must be validated in additional trials.

Down's syndrome is the most common genetic form of intellectual disability, and afflicts approximately one in 1,000 people, according to the World Health Organization.

Also known as trisomy 21, the condition is caused by the presence of an extra, or third, copy of chromosome number 21.

Humans normally have 23 pairs of chromosomes, which together contain up to 25,000 protein-coding genes.

In Down's syndrome, the extra copy causes some of the genes in chromosome 21 to be "over-expressed", leading to reduced cognitive abilities and other health problems.

In earlier experiments with mice designed to mimic Down's, Dierssen had shown that inhibiting one of these genes, DYRK1A, improved function and development in the brain.

## 'A leap forward'

But the technique used—gene therapy—was not an option for humans, so the researchers turned to the green tea compound.

In the trials, 84 young adults with Down's syndrome were split into two groups.

One was given a decaffeinated green tea supplement containing 45 percent epigallocatechin gallate, along with weekly online cognitive training.

The second group had the same training, but ingested a look-alike placebo instead of the supplement.

The subjects took cognitive tests after three, six and 12 months.

There was little-to-no change in most categories, but in a few—the ability to remember patterns, verbal recall, adaptive behaviour—the "[green tea](#)" group scored significantly better.

Moreover, they improved over time.

"It's exciting that an understanding of the genetic neurobiology of Down's syndrome is leading to the possibility of disorder-specific treatments," said David Nutt, head of the Centre for Neuropsychopharmacology at Imperial College London, in commenting on the study.

Marie-Claude Potier, a Down's specialist at the Brain and Spine Institute in Paris, said the results were a "leap forward," but that safety and efficacy need to be confirmed.

Still genetics is not everything, cautioned another pair of researchers, even as they recognised the importance of the new study.

"We can no longer afford to view someone with Down's syndrome solely through the lens of trisomy 21," noted Fabian Fernandez and Jamie Edgin of the Evelyn F. McKnight Brain Institute at the University of Arizona in a commentary.

It is equally important to "understand each individual in light of their larger genetic and environmental background," as well as other [health problems](#) and access to education, they wrote in *The Lancet Neurology*.

**More information:** Rafael de la Torre et al, Safety and efficacy of cognitive training plus epigallocatechin-3-gallate in young adults with Down's syndrome (TESDAD): a double-blind, randomised, placebo-controlled, phase 2 trial, *The Lancet Neurology* (2016). DOI: 10.1016/S1474-4422(16)30034-5

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