



Institut Hospital del Mar
d'Investigacions Mèdiques

PRODUCT KNOW-HOW IMPROVES COGNITIVE CAPACITIES OF DOWN'S SYNDROME SUFFERERS

A team of scientists led by doctors Rafael de la Torre from the Hospital del Mar Medical Research Institute (IMIM) and Mara Dierssen from the Centre for Genomic Regulation (CRG) has shown that epigallocatechin gallate, a compound present in green tea, together with a cognitive stimulation protocol, improve the intellectual capacities of individuals with Down's syndrome. They modify the excitability and functional connectivity in sufferers' brains, improving their memory, attention, and their capacity to learn, and these changes also correlate with biological alterations in cerebral connections.

In order to carry out the project the researchers had to design a product that dispensed the epigallocatechin gallate to the participants. Considering the swallowing difficulties experienced by some people with Down's syndrome, and assessing other nutritional deficits, the researchers participated in the design of a nutraceutical product made by [Grand Fontaine](#), which is currently available in pharmacies. In addition, the scientists are also developing new software for applying the cognitive stimulation protocol, as if it were a videogame for training the memory, attention, and language, as well as other executive functions. The program that was employed in the clinical trial is also available for those people who would like to use it, separate from the clinical study that has now finished.

This is the first time a treatment has proven effective in improving the cognitive abilities of people suffering from this syndrome. Although it is necessary to clarify that it is not a cure for Down's syndrome, it is a tool that could improve these people's quality of life. The teams heading up the study are Dr Rafael Torre's Integrated Pharmacology and Systems Neuroscience clinical research group at the Hospital de Mar Medical Research Institute and Dr Maria Dierssen's Cellular and Systems Neurobiology group at the Centre for Genomic Regulation. They have been supported by neurophysiology and neuroimaging scientists at Hospital del Mar as well as various organisations and foundations (Fundació Catalana Síndrome de Down, Fundació Espai Salut, Associació Catalana X Fràgil). The study involved a multidisciplinary team that tackled the same problem from several different angles, and which included experts in neurosciences, pharmacology, biochemistry, genetics, neuropsychology, and neurophysiology, as well as specialists in neuroimaging.

The scientists presented the results of their research in June 2016, coinciding with the

publication of the work in *Lancet Neurology*. The findings are the result of a long process of basic, pharmacological and clinical research that underlines the importance of collaboration and multidisciplinary investigation, as well as the commitment of the centres to carrying out translational research. This scientific and social success is a great achievement not only for Down's syndrome sufferers and their families, but also for the Catalan research system, which has demonstrated its quality and the leadership capacity of its centres.

Further information

Project Webpage: <https://cridard.imim.es/>