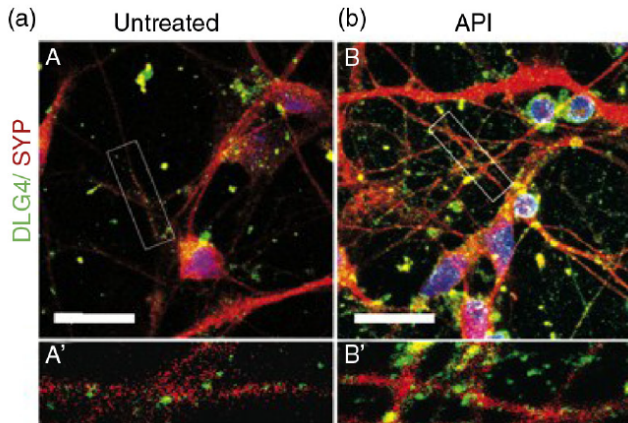


Plant compound found in spices and herbs increases brain connections

10 December 2015



The neurons treated with apigenin (right) show more formation of synapses (red) than the neuron that were not treated. Credit: Rehen et al.

Brazilian researchers from D'Or Institute for Research and Education (IDOR), Federal University of Rio de Janeiro (UFRJ) and Federal University of Bahia (UFBA) have demonstrated in laboratory that apigenin, a substance found in parsley, thyme, chamomile and red pepper, improves neuron formation and strengthens the connections between brain cells.

Previous experiments with animals had already shown that substances from the same chemical group as the apigenin, known as flavonoids, positively affect memory and learning. Many studies highlight the potential of flavonoids to preserve and enhance [brain](#) function. While the effectiveness of flavonoids for brain health is not an entirely new concept, this research is the first to show the positive effects of apigenin directly on human cells and the first to unraveling its mechanism.

The scientists observed that just by applying apigenin to human stem cells in a dish they

become [neurons](#) after 25 days - an effect they would not see without the substance. Moreover, the neurons that were formed made stronger and sophisticated connections among themselves after being treated with this natural compound.

"Strong connections between neurons are crucial for good brain function, memory consolidation and learning", says neuroscientist from IDOR and UFRJ Stevens Rehen, leader author of the paper published today at *Advances in Regenerative Biology*.

The research team conducted by Rehen demonstrated that apigenin works by binding to estrogen receptors, which affect the development, maturation, function, and plasticity of the nervous system. This group of hormones is known to delay the onset of psychiatric and neurodegenerative disorders such as schizophrenia, depression, Alzheimer's and Parkinson's disease. However, the use of estrogen-based therapies is limited by the increased risk of estrogen-dependent tumors and cardiovascular problems.

Researchers believe apigenin can be used as an alternative approach on future treatments for neurodegenerative diseases as well as in neuronal differentiation strategies in laboratory.

"We show a new path for new studies with this substance", points out Rehen. "Moreover, flavonoids are present at high amounts in some foods and we can speculate that a diet rich in [flavonoids](#) may influence the formation of neurons and the way they communicate within the brain."

More information: Cleide S. Souza et al. Commitment of human pluripotent stem cells to a neural lineage is induced by the pro-estrogenic flavonoid apigenin, *Advances in Regenerative Biology* (2015). DOI: [10.3402/arb.v2.29244](https://doi.org/10.3402/arb.v2.29244)

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