

Substance present in ayahuasca brew stimulates generation of human neural cells

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Ayahuasca is a beverage that has been used for centuries by Native South-Americans. Studies suggest that it exhibits anxiolytic and antidepressant effects in humans. One of the main substances present in the beverage is harmine, a beta-carboline which potential therapeutic effects for depression has been recently described in mice.

"It has been shown in rodents that antidepressant medication acts by inducing neurogenesis. So we decided to test if harmine, an alkaloid with the highest concentration in the psychotropic plant decoction ayahuasca, would trigger neurogenesis in human neural cells", said Vanja Dakic, PhD student and one of the authors in the study.

In order to elucidate these effects, researchers from the D'Or Institute for Research and Education (IDOR) and the Institute of Biomedical Sciences at the Federal University of Rio de Janeiro (ICB-UFRJ) exposed human neural progenitors to this beta-carboline. After four days, harmine led to a 70% increase in proliferation of human [neural progenitor cells](#).

Researchers were also able to identify how the human neural cells respond to harmine. The described [effect](#) involves the inhibition of DYRK1A, which is located on chromosome 21 and is over activated in patients with Down syndrome and Alzheimer's Disease.

"Our results demonstrate that harmine is able to generate new human neural cells, similarly to the effects of classical antidepressant drugs,

which frequently are followed by diverse side effects. Moreover, the observation that harmine inhibits DYRK1A in [neural cells](#) allows us to speculate about future studies to test its potential therapeutic role over cognitive deficits observed in Down syndrome and neurodegenerative diseases", suggests Stevens Rehen, researcher from IDOR and ICB-UFRJ.

More information: Vanja Dakic et al, Harmine stimulates proliferation of human neural progenitors, *PeerJ* (2016). [DOI: 10.7717/peerj.2727](#)

Provided by D'Or Institute for Research and Education

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