

doi:10.1038/nindia.2010.83; Published online 21 June 2010

Research highlight

Reduce fat, increase anxiety

New research has shown that mevastatin, a cholesterol-lowering drug, may affect the activity of the serotonin_{1A} receptor¹. This receptor is bound to nerve cell membranes, and its inactivity has previously been linked to anxiety and mood disorders.

Cholesterol is an important lipid because it is known to regulate the function of membrane receptors — neuronal receptors in particular. To explore how cholesterol-lowering drugs affect the activity of the serotonin_{1A} receptor, the researchers carried out experiments with three types of cells — fluorescent protein-tagged Chinese hamster ovary (CHO) cells (control), cholesterol-treated CHO cells and cholesterol-replenished CHO cells. They used mevastatin as a cholesterol-lowering drug that inhibits the activity of HMG-CoA reductase, leading to cholesterol depletion.

CHO cells expressing human serotonin receptors were treated with mevastatin. This treatment caused a decrease in cholesterol content and therefore a significant reduction in the activity of serotonin receptors. When the CHO cells were replenished with cholesterol, the activity of the serotonin receptors was restored. The study suggests that the interaction between cholesterol and receptors such as serotonin_{1A} is crucial for normal brain operation.

"There is growing concern in the medical community that the chronic use of cholesterol-lowering drugs causes depression and anxiety," says lead researcher Amitabha Chattopadhyay. "Our work is the first step towards finding the molecular evidence that could pin down such a relationship."



Lead researcher Amitabha Chattopadhyay (sitting) and co-researcher Sandeep Shrivastava.

References

1. Shrivastava, S. *et al.* Chronic cholesterol depletion using statin impairs the function and dynamics of human serotonin_{1A} receptors. *Biochemistry*. doi: [10.1021/bi100276b](https://doi.org/10.1021/bi100276b) (2010)

Nature India EISSN 1755-3180

About NPG
Contact NPG
RSS web feeds
Help

Privacy policy
Legal notice
Accessibility statement
Terms

Nature News
Naturejobs
Nature Asia
Nature Education

Search:

go

© 2010 Nature Publishing Group, a division of Macmillan Publishers Limited. All Rights Reserved.

partner of AGORA, HINARI, OARE, INASP, CrossRef and COUNTER