

Cannabinoids may be responsible for weight gain associated with schizophrenia

February 5 2015

Cannabinoids may be involved in the weight gain that occurs in people with schizophrenia who are treated with the antipsychotic olanzapine, according to a pilot study published in the *Journal of Clinical Psychopharmacology* by researchers at the Institut universitaire en santé mentale de Montréal (IUSMM) and Université de Montréal (UdeM).

"Cannabis produces psychoactive effects via endogenous cannabinoids, which are a type of chemicals found in the brain," stated Stéphane Potvin, first author and researcher at the IUSMM and the Department of Psychiatry at UdeM. "Our preliminary data suggest that endogenous cannabinoids may be involved in weight gain in people with schizophrenia through action on specific parts of the brain involved in appetite."

The team recently studied the eating behaviour of 15 people with schizophrenia who were treated for 16 weeks with olanzapine, an atypical antipsychotic known to stimulate appetite. These participants viewed neutral images or images designed to stimulate their appetites during a functional magnetic resonance imaging (fMRI) scan, before and after 16 weeks of treatment with olanzapine. The team also measured the subjects' fasting glucose, insulin and lipid levels as well as their levels of endogenous cannabinoids.

Results

After the treatment, the researchers observed hyperactivation in the left

amygdala (limbic region) in [schizophrenia patients](#), relative to a control group of healthy subjects. These brain changes were associated with increased levels of glucose, triglycerides and anandamide, which is the main cannabinoid neurotransmitter. During the treatment, the participants also gained weight and had fewer positive symptoms (delusions and hallucinations). The statistical analysis suggests the involvement of anandamide in amygdala hyperactivation in subjects who viewed images that stimulate appetite.

"This result is consistent with reports in the scientific literature that an increase in cannabinoids, particularly anandamide, is involved in the motivational aspect of eating behaviour. It is also consistent with the fact that cannabis smoking increases appetite, a well-known phenomenon that many people call the 'munchies,'" explained Stéphane Potvin. "To our knowledge, this is the first neuroimaging study that reports a relationship between anandamide levels and disordered eating in people with schizophrenia, although a cause-and-effect relationship has not been proven. These preliminary results must be confirmed with larger sample sizes. Further studies will allow us to better understand the [weight gain](#) associated with antipsychotic treatment for [schizophrenia](#), which remains a significant clinical problem, as some antipsychotics cause major metabolic side effects," concluded the researcher.

More information: Potvin S, Lungu OV, Stip E. "Anandamide is involved in appetite-related amygdala hyperactivations in schizophrenia patients treated with olanzapine: a functional magnetic resonance imaging study." *J Clin Psychopharmacol*. 2015 Feb; 35:82-3. [DOI: 10.1097/JCP.0000000000000236](#).

Provided by University of Montreal

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