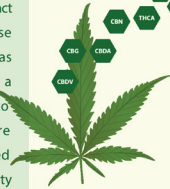
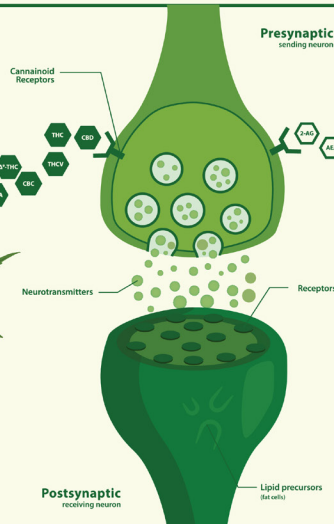


## Phytocannabinoids

The cannabis plant and other plants produce cannabinoids, which interact with our body's receptors. These plant cannabinoids are known as phyto-cannabinoids. Phyto is a prefix that means "pertaining to derived from plants". They are categorized as any plant-derived natural product with the capability to directly interact with the body's cannabinoid receptors or share chemical similarity with cannabinoids.



Cannabis



## Endocannabinoids

The endocannabinoid system (ECS) is a biological system composed of endocannabinoids, which are endogenous lipid-based retrograde neurotransmitters that bind to cannabinoid receptors, and cannabinoid receptor proteins that are expressed throughout the vertebrate central nervous system (including the brain) and peripheral nervous system. The endocannabinoid system remains under preliminary research, but may be involved in regulating physiological, appetite, pain-sensation, and in mediating the pharmacological effects of cannabis.



Human

# SCHIZOPHRENIA Factsheet

October 2020

### What are endocannabinoids?

The endocannabinoid system is an endogenous biological system that regulates functions including cognition, sleep, energy metabolism, and inflammation. It modulates different neurotransmitter systems in the brain, including dopamine, glutamate, and GABA using two major lipid-based mediators, anandamide and arachidonoyl-sn-glycerol that act through type one and type two cannabinoid receptors.

Exogenous cannabinoids, such as delta-9-tetrahydrocannabinol (THC), the main psychoactive components of cannabis, and cannabidiol (CBD), impact on the endocannabinoid system. While disturbance of the endocannabinoid system after cannabis consumption has been associated with increased risk of psychotic illness, CBD alone has anti-inflammatory and antipsychotic properties.

### What is the evidence on endocannabinoids in schizophrenia?

Moderate to high quality evidence finds a large effect of higher concentrations of anandamide in the cerebrospinal fluid of patients, a medium-sized effect of higher concentrations of anandamide in the blood of patients, and a medium-sized effect of higher expression of type one cannabinoid receptors on peripheral immune cells of patients. There were insufficient usable data for a meta-analysis on type two cannabinoid receptors, and authors report mixed findings.

Increased severity of positive and negative symptoms was associated with decreased anandamide levels in cerebrospinal fluid and increased expression of type one and two cannabinoid receptors in peripheral blood mononuclear cells.

Poor cognitive performance was associated with decreased anandamide levels in serum and cerebrospinal fluid, increased expression of type one and two cannabinoid receptors in peripheral blood mononuclear cells, decreased expression of endocannabinoid system-synthesizing enzymes in peripheral blood mononuclear cells, and increased expression of endocannabinoid system-degrading enzymes in peripheral blood mononuclear cells.

For more information see the technical table



*NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.*

*Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.*

*Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical benefits for all patients.*

*While we hope you find this information useful, it is always important to discuss any questions about schizophrenia or its treatment with your doctor or other health care provider.*

## HOW YOUR SUPPORT HELPS

We are able to make significant advances due to the generosity of countless people. Your donation allows us to continue to work towards transforming lives. For information on how you can support our research, phone **1300 888 019** or make a secure donation at [neura.edu.au/donate/schizophrenia](http://neura.edu.au/donate/schizophrenia).