



# THE ENDOCANNABINOID SYSTEM: WHAT IS IT AND WHAT DOES IT DO?

In the 1990's Dr. L.A. Matsuda "discovered" the endocannabinoid system when he described the structure and functional expression of the CB-1 cannabinoid receptor for the first time. Since then the scientific community have made leaps and bounds in understanding the function of the endocannabinoids system (ECS), endocannabinoids, and the role that phytocannabinoids (cannabinoids derived from plants) in not only [treating disease, but also maintaining general health and wellness](#).

## THE ENDOCANNABINOID SYSTEM

The ECS is primarily made up of three difference components; cannabinoid receptors, endocannabinoids, and metabolic enzymes.

### CANNABINOID RECEPTORS

The ECS is a remarkably complex network of cannabinoid receptors (CBr's) categorised as either type 1 (CB-1), or type 2 (CB-2). The [CB1](#) receptor is primarily responsible for maintaining homeostasis within the body by modulating the release of neurotransmitters, while [CB2](#) receptors are involved with immune function and response, cell death, and cell migration during tissue development.

These receptors and the cannabinoids that interact with each, also play a major role in things like:

- Reducing [pain and inflammation](#)
- Inhibiting excessive [arousal](#)
- Reducing [anxiety](#), [aggression](#), and [depression](#)
- Mediating [motor control](#)
- [Appetite](#) and [digestion](#)

These CBr's are found throughout the bodies of all vertebrates, with receptor sites including both the central and peripheral nervous systems, the immune system, the digestive system, as well as several other major organs. No wonder then that the ECS and cannabinoids play such a pivotal role health and disease.

### ENDOCANNABINOIDS

Endocannabinoids are a special type of retrograde neurotransmitter that work like a kind of dimmer switch. In addition to sending signals down the signalling pathway, they can also travel back up that same pathway,



“dimming” further communication from happening. To date, there are five known endocannabinoids: [anandamide](#) (AEA); [2-arachidonoylglycerol](#) (2-AG); [O-arachidonoyl ethanolamine](#) (O-AEA); [2-arachidonoyl glyceryl](#) (Noladin); and the most recently discovered [N-Arachidonoyl dopamine](#) (NADA).

## METABOLIC ENZYMES

These ensure that endocannabinoids are only produced and used when needed, helping to break them down once their job is done. Unlike other hormones, endocannabinoids do not persist, nor are they stored for later use, meaning a deficiency can occur (see below) The two major enzymes are [Fatty acid amide hydrolase](#) (FAAH), and [Monoacylglycerol lipase](#) (MAGL).

## CLINICAL ENDOCANNABINOID DEFICIENCY SYNDROME

When the ECS is working properly, the body remains in a state of homeostasis - a kind of dynamic equilibrium, or “Goldilocks zone” - where everything is just right. However, when the ECS becomes dysfunctional or damaged, the body gets kicked out of homeostasis and certain conditions can develop. According to the [Clinical Endocannabinoid Deficiency](#) hypothesis, everything from [neurodegenerative disorders](#), [rheumatoid arthritis](#), and [cancer](#), to pain, migraines, fibromyalgia, and IBS can result from changes in endocannabinoid levels and the ECS. This potentially makes the ECS an ideal target for the treatment of a wide variety of diseases as well as restoring health and balance within the body.

## SUMMARY

The ECS is a crucial and ubiquitous biological system that is found throughout the majority of physiological and organ systems in the body. Not only does this system promote good health, but when things go wrong, it can also cause various symptoms and diseases. Luckily, this also makes the ECS an ideal target for treatment, with scientists believing that by supplementing the body with naturally occurring cannabinoids from plants, these deficiencies can be supplemented, relieving symptoms and restoring health.