

Endocannabinoid System

“eat, sleep, relax, forget and protect”

The endocannabinoid system (eCS) is a lipid (fatty) signalling system found in all vertebrates. It is involved in the regulation of our sleep, pain, temperature, metabolism, appetite, digestion, inflammation, cardiovascular and immune function, emotions, stress response, memory, cognition, nerve development and protection.

The eCS consists of endocannabinoids (cannabinoid molecules produced within our body), cannabinoid receptor sites (proteins on the surface of the cell that act like docking ports for cannabinoids) and enzymes that breakdown the cannabinoids.

Endocannabinoids

There are over 30 endocannabinoids that have been identified. The most researched are anandamide (AEA), 2-arachidonoylglycerol (2-AG) and palmitoylethanolamide (PEA).

AEA

Anandamide partially stimulates CB1 and CB2 receptors and is similar to the phytocannabinoid (cannabinoid derived from plants) THC.

2-AG

2-arachidonoylglycerol (2-AG) strongly activates CB1 and CB2 receptors. 2-AG is more similar to the phytocannabinoid CBD.

PEA

Palmitoylethanolamide (PEA) has been shown to relieve pain and have anti-inflammatory activity.

Receptor sites

Receptor sites are proteins on the surface of the cell that are capable of recognising and bonding with specific molecules. Cannabinoid receptors recognise and bond with our own naturally-produced endocannabinoids, and with phytocannabinoids, those that are produced in plants.

Enzymes

Endocannabinoids are only produced when we need them, and have only a brief life. Within minutes they are degraded by the enzymes fatty acid amide hydrolase (FAAH) and monoacyl-glycerol lipase (MAGL). AEA and 2-AG are metabolised by FAAH and MAGL enzymes respectively.

CB1 Receptor

The CB1 receptor is most abundant in the brain and nervous system, especially in the areas of the brain involved in pain perception.

CB2 Receptor

The CB2 receptor is generally associated with our immune and inflammatory responses. CB2 receptors are found in all organs and tissues with an immune role. CB2 receptor activation reduces inflammation and pain without producing any psychoactive effects.

eCS Deficiency

Some people have endocannabinoid deficiency. This can be caused by not producing enough endocannabinoids, not having enough receptor sites, or by producing too many enzymes that break down the endocannabinoids. Some medical conditions including migraines, fibromyalgia and IBS can be signs of endocannabinoid deficiency, known as CEDS (Clinical Endocannabinoid Deficiency Syndrome).

Looking after your endocannabinoid system

Lifestyle factors and diet can impact your eCS, either positively (up-regulation) or negatively (down-regulation).

Lifestyle choices can beneficially upregulate the eCS. For example:

- some foods can reduce the breakdown of the endocannabinoids by enzymes, thereby boosting endocannabinoid levels.
- supplemental omega 3's can help produce and maintain receptor sites, thereby enhancing eCS signalling.
- exercise can increase the amount of endocannabinoids being produced, thereby increasing endocannabinoid levels.

Similarly, poor lifestyle choices, such as smoking, excessive alcohol consumption and poor diet choices, can downregulate the eCS.

For further information, call us on 1300 4 735 433.

References

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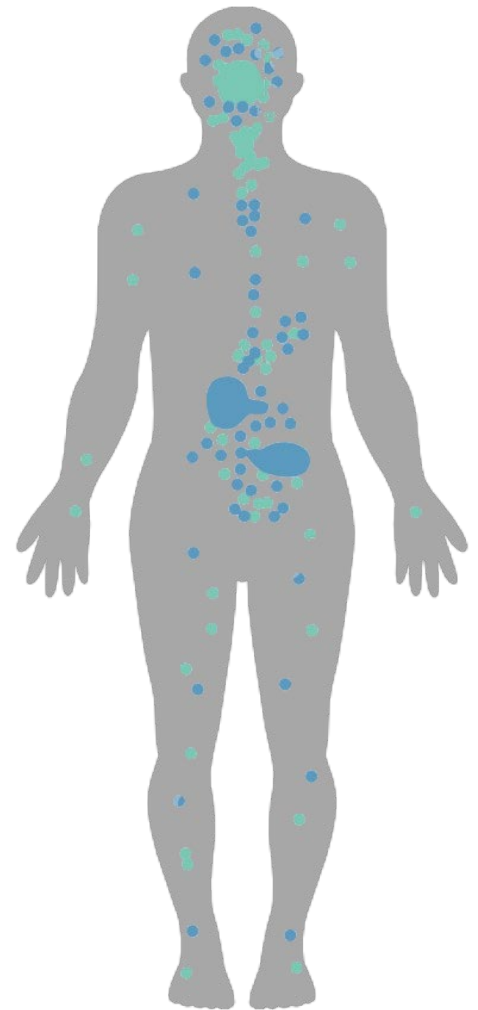


Illustration of CB1 (green) and CB2 (blue) receptors in the body (not to scale).