Gut Health, PEA, and Your Endocannabinoid System

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Science Based

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There's a system that, until recently, has been helping us digest our food without us even knowing! This recently discovered system, the endocannabinoid system, may be just as vital to your body as your microbiome, particularly in supporting gut health. There's a fatty acid called palmitoylethanolamide (PEA) that your body naturally makes to interact with your endocannabinoid system that can be a key player in supporting gut health as well.[1]

In this article, I'll explain how your endocannabinoid system affects gut health. I'll also discuss how PEA, a major component in **ZenAdapt™**, works within your endocannabinoid system and supports gut health. First, let's tackle how your endocannabinoid system functions.

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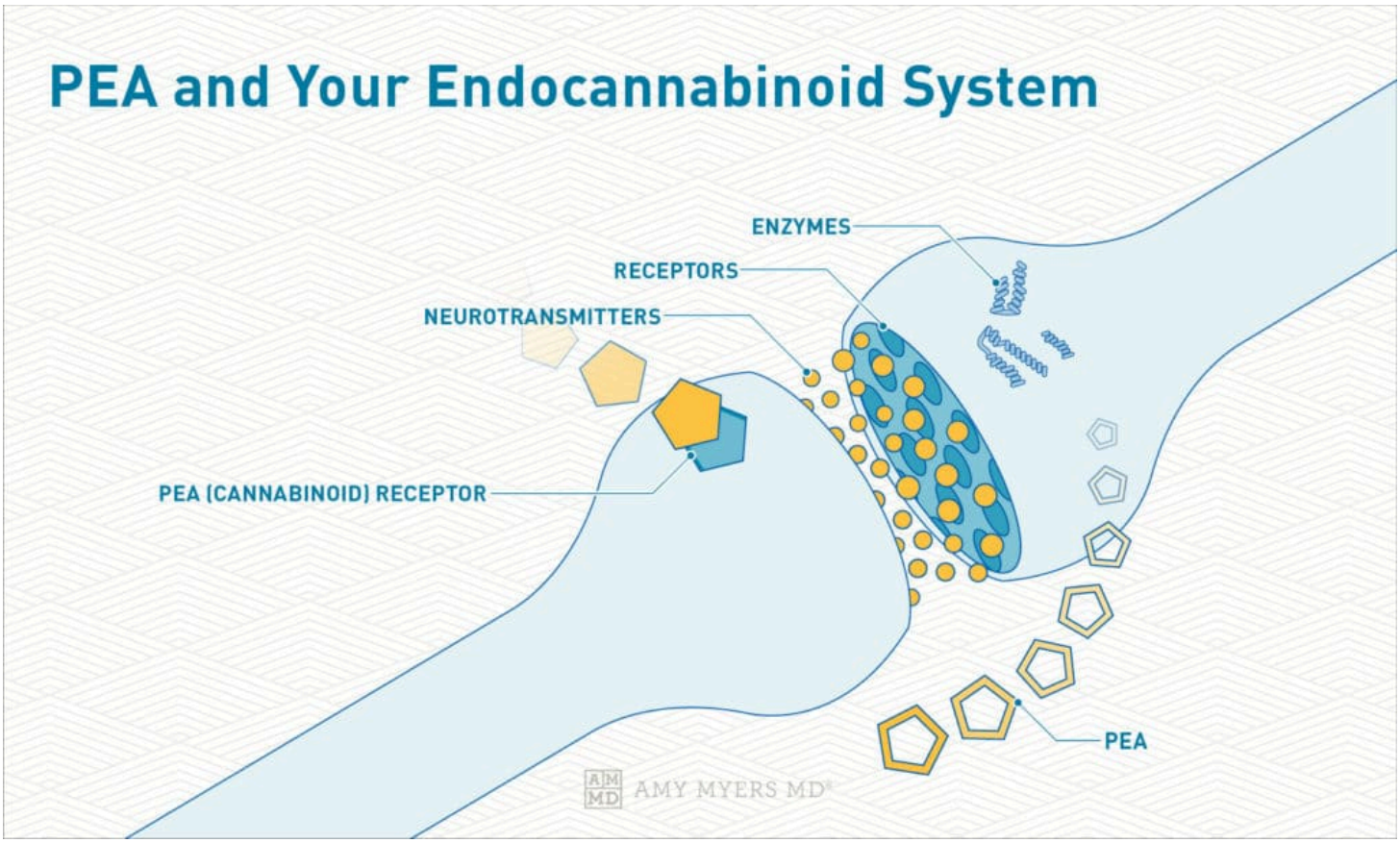
The Endocannabinoid System

Your **endocannabinoid system**, or ECS, uses receptors throughout your body to interact with substances called cannabinoids. These substances can be produced in plants or, like PEA, in your own body. Cannabinoids created in plants are called phytocannabinoids. The ones produced in your body are called endocannabinoids. Your endocannabinoid system regulates a wide variety of functions in your body including pain control. It also plays a role in memory, mood, appetite, stress, immune function, sleep, metabolism, and reproductive function.[2]This system, discovered during the 1990s, includes five major parts.



1. Endocannabinoids

Endocannabinoids are produced all throughout your body and brain. They are built on demand in your cell membranes using building blocks found nearby.[3] Examples of endocannabinoids include PEA, anandamide (AE) and 2-arachidonoylglycerol (2-AG).[4]

2. Cannabinoid Receptors

These are tiny gates cannabinoids can lock on to. So far, we have discovered two receptors called CB1 and CB2 and there are probably more. CB1 receptors exist in your brain and throughout your body. CB2 receptors are mostly located in your immune and gastrointestinal systems.[5]

3. Neurotransmitters

These bind to CB1 and CB2. Neurotransmitters are substances that allow for communication in your nervous system. They also exist all over your body.

4. Transporter Proteins

Several molecules take up and transport endocannabinoids within your body. The most important are transporter proteins. These move endocannabinoids from the spaces *between* your cells safely *into* your cells where they can take effect.[6]

5. Enzymes

The enzymes in this system are proteins that break down and synthesize endocannabinoids such as PEA in your body. Essentially, enzymes “turn off the endocannabinoids when they’ve completed their job.

What is PEA?

As I mentioned above, PEA is an endocannabinoid and fatty acid amide (or compound) produced within your body. Its functions are particularly closely related to pain, inflammation, and gut motility, and therefore, gut health.[7] It interacts with CB1 and CB2 receptors as well as other structures found in the endocannabinoid system.[8] PEA is also in certain foods such as eggs and almonds.

The Role of the Endocannabinoid System in Gut Health

Your endocannabinoid system connects your gut and your brain. In fact, some scientists believe it is the main communication channel between your gut and your brain.[9] This is because they use the same language and hardware, made up of special receptors and neurotransmitters. Their messages flow through the same neurons. Although this language and hardware appears elsewhere in the body, the gut and the brain use it to a much greater degree because of the functions they share.

5 Ways Your Endocannabinoid System Affects Gut Health

1. Leaky Gut

The first way your ECS affects gut health is related to how your endocannabinoid system interacts with your gut microbiota, the beneficial bacteria that live in your gut. We don't fully understand why, however, it may help create new CB2 receptors in the intestinal lining,[10] decreasing permeability. That means that endocannabinoids such as PEA can help keep the junctions between the cells of your gut cell wall tight, **therefore preventing or improving a leaky gut**.

2. Motility

Gut motility is the time it takes for food to move through your intestines. When it is too slow you experience constipation, and when it's too fast you have diarrhea. We know many factors affect your motility, including the types of bacteria that live in your intestines and how much coffee you drink![11]

However, we have recently found that the endocannabinoid system plays an important role in your gut motility, too, in two different ways.

3. Inflammation

An important function of the endocannabinoid system is to limit pro-inflammatory effects in the intestines. There are three specific ways this can happen.

Endocannabinoids such as PEA may help move immune cells to sites in your intestines where there is inflammation[**https://pubmed.ncbi.nlm.nih.gov/21551239/**[/note] by attracting certain chemicals, therefore recruiting immune cells to the area where tissue is damaged.[12]

Certain cytokines, or chemical messengers, that signal your body to produce inflammation may be suppressed by endocannabinoids. When these messages are stifled, they are less effective in producing inflammation in your intestines.[13]

Your ECS helps protect against excessive inflammation in the colon. It does this both by dampening smooth muscular irritation caused by inflammation and by controlling cellular pathways that lead to inflammatory responses. The results of one study suggest that balancing endocannabinoid levels may even halt the progression of colitis.[14]

4. Stress

Once, we thought stress response was regulated solely by hormones. Now we know that isn't true. The endocannabinoid system links your perception of external and internal stimuli with your behavior in reaction to fear, anxiety, and stress.[15] It does this mainly by acting on the CB1 and CB2 receptors in your nervous immune systems. Remember, 80% of your immune system is in your gut. One theory is that endocannabinoids can actually regulate *the sensation* of gut damage caused by chronic stress.[16]

5. Weight Loss

In studies where bacteria were administered to obese and type 2 diabetic mice, the bacteria reversed diet-caused obesity. It did this by increasing intestinal levels of endocannabinoids that control inflammation, the gut barrier, and gut peptide secretion to naturally reduce gut permeability.[17]

Support Gut Health with PEA

Because of all the ways endocannabinoids support gut health, I felt it was critical to include an endocannabinoid in **ZenAdapt™**. I chose palmitoylethanolamide (PEA) over any other endocannabinoid because your body naturally produces it. We understand how it works much better than the varieties that have to be synthesized and analyzed to ensure no harmful molecules are included.

I custom-formulated **ZenAdapt™** from a blend of botanicals and micronutrients, designed to support a balanced stress response. It contains PEA for its ability to help you achieve a healthy response to stress-induced inflammation in your gut. As I discussed earlier, PEA also works to support appropriate gut motility and to optimize the makeup of your microbiome. Because of its support of your microbiome, PEA is also a great addition to your weight management plan.

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