Mechoulam's lab isolated a second endogenous compound, arachidonyl glyceride, or 2-AG, which is more abundant in the body but less potent than anandamide. Although their structures are different, AEA, 2-AG and THC have similar pharmacological effects.

The receptors to which they bind weave in and out of the cell membrane and are coupled to a protein that triggers events within the cell leading to slowed release of neurotransmitters. (Think of a tiny door knob twisting on the outside of a frenzied bee hive and starting a sequence of events on the inside that results in fewer bees departing the hive.) Because the cannabinoids affect the intensity with which other neurotransmitters are firing, they modulate numerous systems within the body. Mechoulam said, “There is almost no physiological system that has been looked into in which endocannabinoids don’t play a certain part.”

Unlike THC, CBD hardly binds to the CB1 receptor. It binds to a second cannabinoid receptor — CB2 — originally found in spleen cells by S. Munro of Cambridge University in 1993 and subsequently found in the stomach, liver, heart, kidney, lymph and immune cells, bones, endocrine glands, and throughout the peripheral nervous system. In his IACM talk Mechoulam reviewed research in recent years that has shed light on aspects of CBD’s mechanism of action. Its lipid-solubility enables it to get into places in the brain that conventional neurotransmitters cannot. It is a potent anti-inflammatory agent. It turns out to be an antagonist to a recently discovered receptor called GPR-55 to which THC and 2-AG bind to a recently discovered receptor called GPR-55 to which THC and 2-AG bind.

Mechoulam said, “When one says ‘cannabis causes sleep,’ one should really think of two compounds, one that causes sleep, one that causes awakening.” Mechoulam, “When one says ‘cannabis causes sleep,’ one should really think of two compounds, one that causes sleep, one that causes awakening.”

CBD for Diabetes

Mechoulam has been testing CBD on mice bred to have a version of type-1 diabetes that manifests around age 14 weeks. He and his co-workers treated these mice with CBD and found that it reduced inflammation by almost 50% at the right dose — 5mg/kg of body weight. But this “beautiful anti-inflammatory reaction may be lost if we went up to say, 25mg/kg,” Mechoulam said. Drug developers must bear in mind and cope with the fact that cannabinoids have a finite “therapeutic window” — they are ineffective at low and high doses.

CBD and seizures

Mechoulam said. He has been trying to recruit patients to treat PTSD. “I’m not sure that all of them are convinced,” Mechoulam said. He has been trying to recruit patients to treat PTSD. “I’m not sure that all of them are convinced.”

Anti-nausea

The anti-nausea and memory extinction effects of CBD “seem to be closely related,” Mechoulam said. He described the problem of anticipatory nausea, for which no good drugs are available. (The effects of chemotherapy can be so nauseating that patients start vomitting when they see the doctor or nurse who is going to administer the treatment.)

Efforts Working with mice at Hebrew University have found that CBD treatment at the time of a heart attack can reduce infarct size by about 56%. “So now they’re pushing me, let’s have more CBD,” Mechoulam said. He has been trying to interest the Israeli Ministry of Health in testing CBD and THC at various ratios to treat PTSD.