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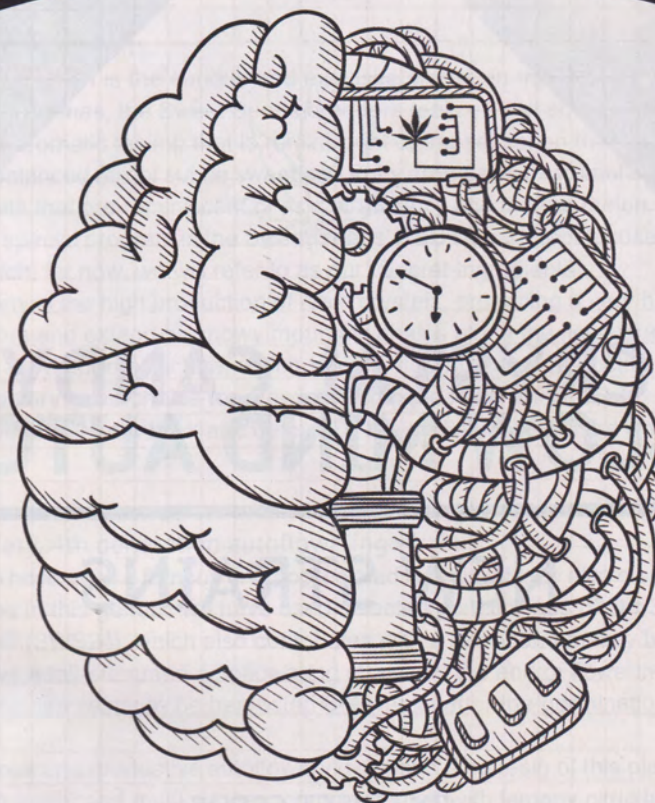


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THE
ENDOCANNABINOID



SYSTEM

WORDS - FRENCHY CANNOLI
PHOTOS - TODD MCCORMICK



During a medical trial for a new drug that impacts the human cannabinoid system, a volunteer was killed and four others disabled by unforeseen side effects. Before discussing the science behind this tragedy, I want to offer my sincere condolences to the victims and their families.

Report from an article on CNN, January 2016:

"A man has died in France after participating in a clinical drug trial, the University Hospital of Rennes said in a statement Sunday.

Four other patients may be permanently disabled with neurological damage, doctors in the northwestern city of Rennes said. One other person doesn't have symptoms but remains under medical surveillance.

The drug being tested is a painkiller meant to treat anxiety and motor disorders, and was designed to work on the body's endogenous cannabinoid system, which deals with pain. Earlier reports said the drug was related to cannabis, but French Social Affairs and Health Minister Marisol insisted that the drug does not contain cannabis or cannabis extracts."

"The drug was an FAAH (fatty acid amide hydrolase) inhibitor; FAAH is an enzyme produced in the brain and elsewhere in the body that breaks down neurotransmitters known as endocannabinoids. By blocking these enzymes, FAAH inhibitors cause endocannabinoids — which activate the same neural receptors as the active chemical in cannabis, and might have painkilling properties — to accumulate in the body."

What is the endogenous cannabinoid system?

To better understand why scientists want to create a drug to block the natural

function of the endocannabinoid system, we need to understand the role it plays in regulating pain in the human body. The endocannabinoid system and its receptors are found throughout our body: in our immune and nervous systems, in our brain and all our body's organs. Endocannabinoids regulate all the body's systems homeostatically at the molecular level to alter consciousness and mood, stimulate appetite, reduce nausea, suppress seizures, relieve pain or stop asthma attacks to name but a few of the functions it can impact upon.

The full significance of the endocannabinoid system for the future of human health has not yet been totally defined, however its potential is incredibly vast. It appears to be the new emerging target of pharmacotherapy and is creating a lot of scientific interest.

"By using a plant that has been around for thousands of years, we discovered a new physiological system of immense importance," says Professor Raphael Mechoulam; since his discovery of the endogenous cannabinoid neurotransmitter anandamide in 1992, more than 3,500 scientific reports have explored the principal characteristics of the endocannabinoid system.

The medical and scientific communities have uncovered a new physiological system that is actually as old as life itself if, as scientific evidences indicate, *"the ability of cells*

to synthesize molecules that are categorized as "endocannabinoids" in mammals is an evolutionarily ancient phenomenon that may date back to the unicellular common ancestor of animals and plants".

This billion-year-old endocannabinoids system is triggered by very specific natural compounds, the cannabinoids, that are synthesized by only one plant in over 400,000 known plant species on earth: Cannabis.

Are drug companies actively trying to synthetically mimic the compounds of a plant that is illegal, and considered as having no medicinal value whatsoever?

The publicized motives behind cannabis research are the prevention of the psychoactive and addictive aspects of natural cannabinoids, and enhancement of the pharmacological properties of the plant.





“The full significance of the endocannabinoid system for the future of human health has not yet been totally defined...”



Prescription drugs are the third most commonly abused category of drugs, behind alcohol and Cannabis, ahead of cocaine, heroin, and methamphetamine.

An industry that sells drugs like Oxycodone, Demerol, Xanax, Klonopin and Valium by the truckload on a daily basis is worried about the addictive aspect of cannabinoids derived from the Cannabis plant. Really?

“Cannabis can cause dependency but withdrawal is milder than withdrawal from several other legal and illegal drugs, and dependency is less frequent than with most other common legal and illegal drugs.” A Congressionally-mandated Institute of Medicine study found that fewer than 10 percent of those who try marijuana ever meet the clinical criteria for dependence, while 32 percent of tobacco users and 15 percent of alcohol users do.

The second and most obvious motive behind the research done on cannabinoids is control. The discovery of the endocannabinoid system is a new evolution in medicine; the development, production and distribution of synthetic Cannabis compounds would generate incalculable revenue.

There are actually two synthetic cannabinoids on the market with 40 years of published clinical trials on over 34 health syndromes ranging from acute pain to post-traumatic stress disorder and Tourette's syndrome: nabilone, the first synthetic cannabinoid and dronabinol a synthetic THC. Such an extensive *“range of symptoms and disorders can only been explained by the effect of a drug class on a ubiquitous substrate, the endocannabinoid system. The range of conditions also reflects reports by patients' use of herbal cannabis for similar purposes and lists of conditions for which cannabis is approved for medical purposes in the United States.”* The point being, if the natural herb, easily grown, and now accessible to the average home-user with non-critical symptoms through

the network of legal dispensaries, why would any patient want to take the risk of using a synthetic version that may have adverse side-affects?

These synthetic cannabinoids were apparently not providing the desired alternative to cannabis, which brought the House of Lords Science and Technology Select Committee, and the British Medical Association to urge the development of a new medicinal form of cannabis for the treatment of multiple sclerosis (MS) and chronic pain in the late 1990s; Sativex, a licensed extract of the Cannabis plant, was introduced in late 2010 and has been approved since in most European countries, Australia, Canada and Israel.

Unfortunately, research done in the 80s and 90s on identifying and developing a cannabinoid-based, non-dependence type of analgesics also brought the discovery of new and extremely potent types of compounds described as non-classical cannabinoids. The research ultimately went public and gave rise to a new class of synthetic cannabinoids on the black market with tragic consequences - synthetic

cannabis with name like “Spice” or “K2” have killed numerous victims and are a major concern today in the US and Europe, to the point of actually being a positive factor in the argument for Cannabis legalization.

“Cannabis is a unique, natural medicine that taps into how we work biologically on a very deep level. Thanks to this plant, scientists have been able to decipher the primordial language that nerves and brain cells use to communicate”.

Cannabis is the door to a new realm of medicine, an affordable natural and ecological evolution of the drug industry for the health of humanity.

Cannabinoids and Cannabis terpenes are natural compounds produced in abundance by a plant that has adapted to most climates found on earth; it would seem more beneficial to extract these natural compounds instead of wasting time, spending fortunes and risking lives creating



THCA Cali Labs



“...scientists have come to terms with the fact that the ‘hippies’ were on to something when it came to the benefits of the cannabis plant...”

synthetic composites.

We have had the potential to extract separately pure cannabinoid compounds and cannabis terpenes directly from the plant for a while; the perfume industry has the science to extract and isolate most natural plant compounds the planet has to offer as a daily routine. Butane and CO₂ extractions are technologies used by the perfume industry to capture the most volatile terpenes, and they have been applied to cannabis resin in recent years to produce an array of concentrates that have become purer, cleaner, and richer in terpenes. However, these are still directed mainly toward a smoker's market.

The ground has been broken nonetheless, the tools are available and only a more visionary and scientific approach was necessary for a small company like Guild Extracts to start producing 99.677% pure THCA and CBDA, or Trichomes Technology to extract and isolate cannabis terpenes for medical use and study in-depth the unique synergistic interaction of the terpenes in cannabis.

New cutting edge companies like C3 Analytical, are today not only bringing advanced technologies to the future of Cannabis as a recognized medicine, but also to scientists from the drug industry to raise the standards in medicinal and nutraceutical cannabis products. C3 Analytical is a Cannabis-focused contract research organization (CRO), with field services and a state-of-the-art research center in Berkeley, California.

Times have changed, scientists have come to terms with the fact that the “hippies” were on to something when it came to the benefits of the cannabis plant – we, the patient-consumer of the plant in its natural form, know better than anyone the full medicinal potential of Cannabis and in the near future new companies will extract every cannabinoid and terpene compound the plant has to offer to create a new pharmacopeia that will safely interplay with the human endogenous cannabinoid system and change the course of medicine.

What a scary thought that must be for the pharmaceutical companies!

Frenchy Cannoli is a consultant, educator and writer in the Cannabis industry with special focus on hash making using traditional methods. Using the precedent of the wine industry's business model developed from the concept of “terroir” in his native France, Frenchy advocates on behalf of the breeders and growers of California's Emerald Triangle. Frenchy can be reached through his website at: www.frenchycannoli.com or seen on Instagram @frenchycannoli.

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Illustration: original brain illustration by freepik.com