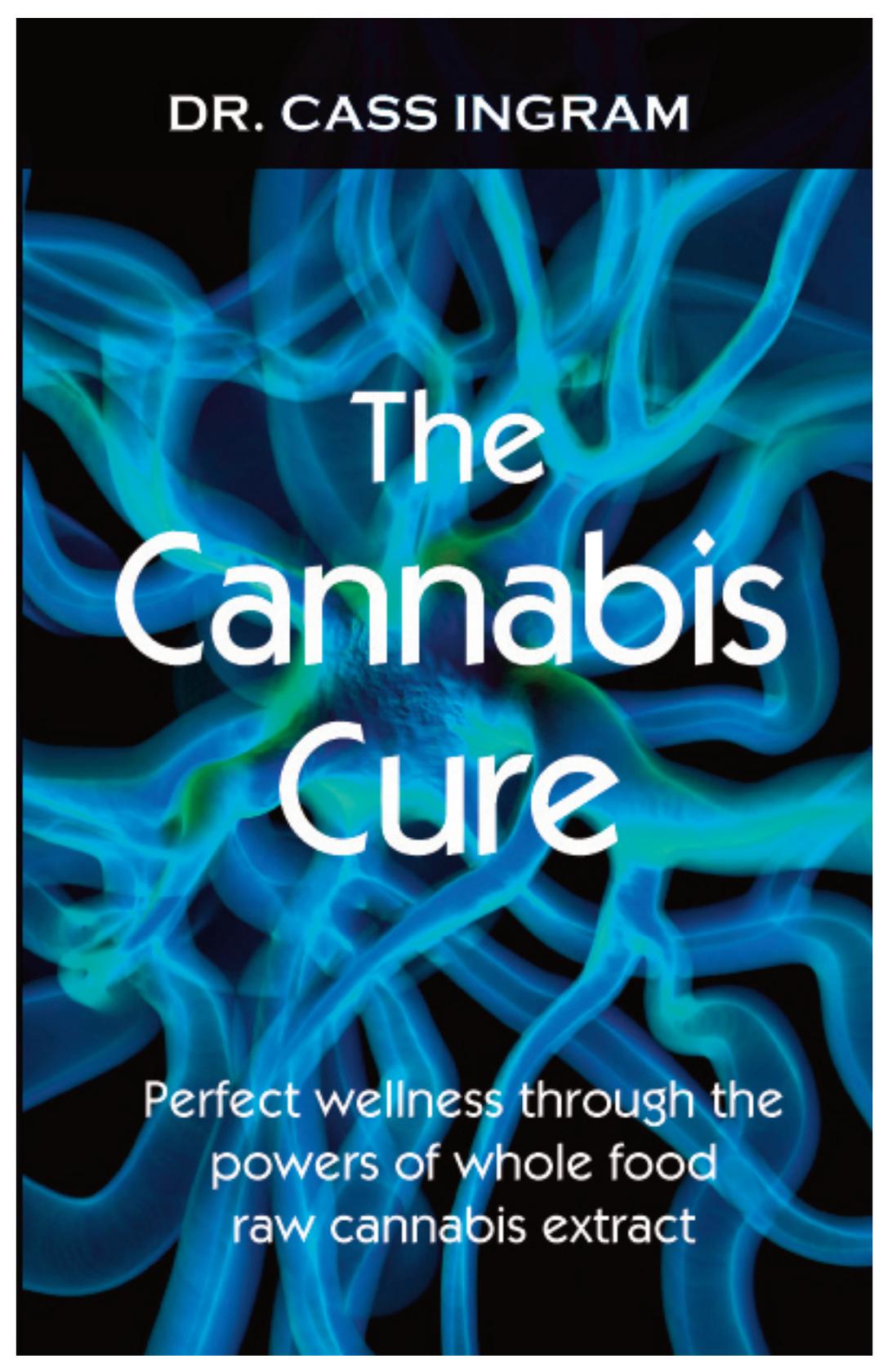


DR. CASS INGRAM



The Cannabis Cure

Perfect wellness through the
powers of whole food
raw cannabis extract

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Chapter One

The Chemistry of Hemp

The name of the hemp plant, botanically, is *Cannabis*, that being the genus name. The species name is *sativa*. The other common species is *indica*, derived from its source, India. The terms hemp and cannabis will be used interchangeably. In contrast, the hallucinogenic type, that is the type that has hypnotic powers, will be referred to as marijuana.

It seems that some people can't get over the term cannabis. Somehow, they think it is bad: that it means pot. How can this be the case? It is merely its botanical identification. Pot or marijuana is bred to be hypnotic. Otherwise, no one would use it. Yet, the marijuana plant, too, is cannabis. Here, the type which is described is the industrial type, which is free of intoxicating powers to any degree. Cannabis is a descriptive term, because it identifies the original, non-intoxicating plant with vast medicinal powers, while also being used to describe the intoxicating variety, often leading to confusion.

Hemp is a terpenoid plant

Let us revisit the terms cannabinoid and terpenes, or terpenoid, because here is where the true powers, as well as sophistication, of the plant are found. Of the nearly 500 different compounds found in hemp some 60-plus are cannabinoids, and virtually all these molecules are terpenes. As published by R. Brenneisen in *Marijuana and the Cannabinoids* the term cannabinoid represents a group of chemicals which are phenolic compounds, more correctly, terpene-phenolic combinations known as terpenophenolic compounds. The description of these substances is important, because it explains the wide-ranging therapeutic powers of this plant. The substances are highly aromatic and account for the unique smell of cannabis but also those prominent aromas of other cannabinoid-rich plants such as spices, parsley, and celery. It is all the handiwork of the creator to make the food more appealing while also creating the necessary defensive mechanisms within the foodstuffs to protect them from pests and microbes.

Some 200 terpenes have been found in cannabis, which is a massive amount and makes the plant the most diverse source of these substances known. Only a few of these odoriferous, oily substances appear in sufficient quantities to be medicinally important. Here, it is crucial to realize that the density of terpenes varies considerably from strain to strain. Ideally, in the terpene fraction the medicinal complex should contain some 40% to 50% Beta-caryophyllene in extract form, while weaker forms may be as low as 5%. It is this terpene which is the major odor source for cannabis.

This variation in the density of this compound impacts not only the therapeutic value but also the odor and taste. The

range of flavors of cannabis is extraordinary. No other plant known matches the cacophony of smells and tastes available.

Caryophyllene is a sesquiterpene. This type of molecule is larger than the typical type of terpenes, known as monoterpenes. Examples of monoterpenes include pinene, limonene, and myrcene. While these are also medicinal, Beta-caryophyllene is different. Technically, it is a condensation of two benzene rings plus other structural components. It is known chemically as a bicyclic sesquiterpene. The prefix 'bi' indicates two, therefore, the two phenolic rings.

There is another reason it is unique among all cannabinoid chemicals. This is because it contains a specialized chemical component known as a cyclobutane ring, a rarity in nature. This ring component gives the compound unique chemical properties as well as a novel capacity for penetrating tissues, notably fat- or lipid-based tissues such as brain and nerve matter.

The compound is commonly found in the essential oils of numerous plants. Particularly predominant in spices and herbs, the richest known sources include cannabis along with black pepper, rosemary, hops, and wild oregano. For the human body here is the key regarding this novel molecule. The psychoactive element THC activates specifically the CB1 receptors, the ones that induce hallucinogenic responses. This is never the case with Beta-caryophyllene. It only activates the CB2 receptors, which are not associated with the marijuana high. In fact, in many respects CB2 activators antagonize the hallucinogenic effects of marijuana, as well as other drugs, like cocaine, and are, therefore, useful in their detoxification.

In contrast to isolated or drug-like forms Beta-caryophyllene is entirely safe for human consumption. In fact, a derivative of

it, caryophyllene oxide, is used as a common food flavoring. Incidentally, since it is the main compound accounting for the strong, unique smell of marijuana caryophyllene oxide is used to train the smell of drug-sniffing dogs.

The fact that in some cultivars Beta-caryophyllene and its related compounds accounts for in the terpene fraction some 50% of the volume is highly revealing, demonstrating the enormity of its value and power. Yet, incredibly, the research community largely neglected it. Instead, there has been a great deal of focus on cannabidiol. The substance has been extensively synthesized and is the basis of a number of drugs. However, in many respects Beta-caryophyllene is far more important, medically. Yet, ultimately, all 60-plus cannabinoids and various terpenes work together to account for hemp's medicinal powers. Clearly, Beta-caryophyllene is one of the most premier of these cannabinoids.

In the 21st century the molecule has become the subject of significant scientific studies, for instance, the work of a team of investigators with the United Arab Emirates University. It was these investigators who determined that rather than cannabidiol or THC it is the highly complex, sophisticated Beta-caryophyllene, which is *the premier hemp-source anti-anxiety and anti-depressive agent*. Publishing in the *Journal of Physiology & Behavior* they determined that the molecule has significant antidepressant actions and is also highly potent in reversing anxiety. These effects were directly a consequence of the action of Beta-caryophyllene on the brain's CB2 receptors. The results were held as highly significant. Even so, this may explain the common report by marijuana smokers of the anti-anxiety and stress-relieving actions of the drug. In fact, according to a 2013 report in *Trends in Pharmaceutical*

Sciences investigative studies have demonstrated that the primary reason for using cannabis is a result of “its ability to reduce feelings of stress, tension, and anxiety.”

Yet, today, what is commonly done? Drugs and also plant extracts are made with the focus on cannabidiol alone. In fact, some marijuana-based drugs consist exclusively of this molecule, whether as a natural extract or synthetic copy. This is a highly erroneous approach. Who is to say which of the 60-odd molecules is most important? How can science fully determine the interactions of these widely diverse molecules and any synergistic or complimentary actions they possess? Moreover, what about the intelligence of raw nature, the balance, the unknown? All this is corrupted through the standard medical approach, the creation of isolates, refined extracts, and/or synthetic versions. This is why it is necessary to consume rather than an altered version the unprocessed whole, where all the various cannabinoids can be found in unison. This will provide the most potent therapeutic effect with the least opportunity for untoward reactions or side-effects.

It is always this way. Science deems a certain substance the active ingredient without any absolute basis. That becomes the trend, and all the other ingredients are secondary, if not being neglected altogether. Even in the herbal medicine business isolates are often the focus instead of the unprocessed, unaltered complex. That is certainly the case with the Beta-caryophyllenes, which rarely are discussed in the standard pro-medical cannabis circles.

Note researchers from ETH Zurich and Bonn University this substance has “largely been ignored.” In fact, according one of the lead investigators of this group, J. Gertsch, no one knew about it until, incredibly, 2008. Yet, it has now been found in scientific studies to have “remarkable pharmacological effects.”