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## Debate

### The Medical Use of Cannabis in Denmark - Considering the Medical Use of Cannabis

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#### Introduction.

In October 2018, the recreational use of marijuana was legalized in Canada. Before that, marijuana had been legalized in certain states in the United States, and there were tours for tourists to experience marijuana. Images of people smoking marijuana in broad daylight are enough to arouse the interest of viewers. In fact, the number of arrests for marijuana-related crimes in Japan has been increasing year by year, and the abuse of marijuana, especially among young people under the age of 29, has been increasing significantly. Japan's anti-drug abuse

policy is based on the principle of strict punishment for all illegal drugs, and the government has been trying to keep illegal drugs away from the public by conducting educational activities that emphasize their dangers. As a result, marijuana has been reported to be as dangerous as hard drugs such as methamphetamine, heroin, and cocaine, but with the easy access to information from all over the world via the Internet, it will be difficult to control the expansion of marijuana abuse with measures that only overly emphasize the danger. There are many books on the smoking of marijuana, especially

those written from the standpoint of advocating the legalization of marijuana, which often claim that marijuana is less dangerous than alcohol. Although there is a lot of scientific data and some of it is convincing 7)11), the reason why the authors cannot simply agree with the claim is that those works rarely mention the psychotic symptoms caused by the abuse of marijuana. On the other hand, it is a fact that cannabinoids, which are components of marijuana, have attracted attention for their analgesic, sedative, hypnotic, and appetite-stimulating effects, which are useful in alleviating symptoms of intractable diseases for which there has been no effective treatment, and have been put to practical use as medical marijuana in countries around the world. Since the National Hospital Organization Shimofusa Psychiatric Center, where the author works, has a specialized treatment unit for drug-related psychiatric disorders, he often sees patients with dependence and addictive psychosis based on smoking marijuana, but it is still a rare disease for general psychiatrists. The author knows very little about medical marijuana. In June 2019, the author visited Denmark and interviewed Danish psychiatrists about the current situation of medical marijuana. No money was exchanged during the interview, and the travel

expenses were paid by the author.

## **I. History of Marijuana Smoking**

Marijuana has a special effect among various illegal drugs. Central nervous system stimulants such as methamphetamine and cocaine, and central nervous system depressants such as heroin and other opiates can be divided into two categories based on whether they have an excitatory or inhibitory effect. Therefore, it cannot be simply classified as a stimulant (upper) or a suppressant (downer). It is impossible to classify it simply as a stimulant or a downer. The effect is that everything that enters the field of vision seems more beautiful, and sounds seem more beautiful and three-dimensional, so it has long been favored by artists. There is no visual or auditory hallucination, but a unique altered state of consciousness called "trip" by the user. What you see remains exactly the same, only the atmosphere is changed. It is called a "good trip" when everything looks beautiful, pleasing, and joyful, and a "bad trip" when everything looks eerie, horrifying, and inspires anxiety and fear. Whether the trip is good or bad depends on the "setting" (psychological state) and "environment" at the time of use 6)9)14). Historically, like hallucinogenic mushrooms and hallucinogenic cacti, they were often used in the rituals of

primitive magical beliefs before the four major religions arose. Hindu ascetics still often smoke marijuana, and hallucinogenic mushrooms and hallucinogenic cacti are used by indigenous shamans in Central and South America to perform rituals 13). The purpose of these rituals is generally the same: to communicate with ancestral spirits and other spirits of the natural world in a hallucination, and to obtain advice on how to live in the real world. Such magical beliefs were found all over the world, and local hallucinogenic plants were used in rituals. The smoking of marijuana for recreational purposes became popular around the mid-19th century. In France, social clubs were established for the purpose of smoking marijuana, and cultural figures such as Gautier, Rimbaud, Baudelaire, and Dumas came and went. In the United States, marijuana was a habit among African Americans and Mexican immigrants, and spread mainly in urban areas 8). In the 20th century, marijuana was regulated as an addictive and dangerous drug. In Japan, the "Cannabis Control Law" promulgated in 1948 and the "Narcotics and Psychotropic Substances Control Law" enacted in 1990 strictly regulated the use of cannabis 15).

Medical marijuana came to be recognized again in the late 20th

century. In the United States, California approved the use of medical marijuana in 1996, and other states began to legalize it one after another, and by the mid-2010s, the majority of states had approved its use. The use of medical marijuana has also been legalized in many other countries, including Canada, the Netherlands, Austria, Israel, Spain, the United Kingdom, and Germany.

Cannabis is said to contain more than 142 cannabinoids, which are composed entirely of carbon, hydrogen, and oxygen without nitrogen. The main ones are tetrahydrocannabinol (THC) and cannabidiol (CBD). CBD has sedative, or anxiolytic effects 15). It is THC that produces the various intoxicating sensations sought by smokers, but it also has analgesic properties. The medical marijuana products approved in other countries include dronabinol and nabilone, which are synthetic THC; nabiximols, which contains THC and CBD extracted from cannabis; epidiolex, which is a formulation of CBD; and cannabis oil, which contains CBD and less than 0.3% THC.

## II. The Reality of Medical Marijuana in Denmark

Denmark consists of the Jutland Peninsula, which juts out from Germany into the Baltic Sea, the surrounding islands, and Greenland. The population is about 5.7 million,

with about 600,000 concentrated in and around the capital, Copenhagen. It is included in the Nordic countries along with Norway, Sweden, and Finland. Taxes are high, but the country is famous for its highly developed social welfare system, known as the Nordic model.

### 1. Danish Cancer Society

There is an organization called the Danish Cancer Society that supports cancer patients. It is a private organization, but it is large in scale. It has seven counseling centers in Japan, which provide education for cancer patients, oncologists and counselors, educational activities, free telephone counseling, and support for self-help groups. Under the umbrella of the headquarters in Copenhagen, there are more than 100 self-help groups for cancer patients. I visited the headquarters of the Danish Cancer Society in Copenhagen and interviewed Ms. Cornelius, N., Chief of Research at the Division of Alternative Therapies. The only medical marijuana that is currently legal in Denmark is Naviximols, which is prescribed to patients with multiple sclerosis, epilepsy, and cancer. It is estimated that about 20-30% of cancer patients in the country use cannabis or medical marijuana. So far, users seem to have good therapeutic effects. The analgesic

effect is weaker than that of morphine, but since it helps people sleep better, they often feel as if they have a strong analgesic effect. In Denmark, large-scale clinical trials have been underway since 2018 with the aim of approving other medical marijuana products and expanding the range of indications. Medical marijuana pharmaceutical companies want to promote it aggressively, but the Danish Cancer Society would rather see it done with caution. They feel that there is not enough evidence to support this. Palliative care specialists are positive about prescribing medical marijuana, but many psychiatrists are skeptical. They are cautious because of the dependency issues and the fact that a small number of people develop psychotic symptoms when using marijuana. In Denmark, patients are now more likely to make their own treatment choices. In addition to medical marijuana, alternative therapies such as yoga and mindfulness meditation are popular, but doctors are not interested in them. Many patients obtain marijuana on the black market because their doctors refuse to prescribe it, or because medical marijuana is too expensive to obtain.

As a psychiatrist, I understand why the author takes a cautious stance on prescribing medical marijuana, but there is a large body of literature

suggesting that CBD, a component of marijuana, may have therapeutic effects on psychiatric disorders 12)16). There are a number of studies that are generally positive, suggesting antipsychotic effects and a reduction in addictive behaviors 1)4). On the other hand, there are some reports that CBD can relieve the effects of THC, but the effects on symptom relief are not consistent 5). In today's information-rich society, the needs of patients will inevitably drive politics. Next, let's hear the opinions of the companies that are developing medical marijuana.

## 2. Opinions of medical marijuana development companies

One of the author's friends is Dr. Rindom, H., a psychiatrist who is one of the pioneers of addiction medicine in Denmark. With his guidance, we visited a company that is developing medical marijuana.

More than half an hour's drive north of the capital city of Copenhagen, there is a company called "Canna Therapeutic". It is a modern building located in a corner of a vast golf course-like land. It was originally a company that developed building materials and cosmetics using marijuana as a raw material, but has now embarked on a new project to develop medical marijuana. I spoke with Mr. Pontippidann, S., the president of the

company, and Mr. Bojesen, G., the chief of the biochemical research department, and was given a tour of the facility.

The first floor of the facility is a research floor. In the first room, there is an aquarium full of small fish, and in another cage there are many grasshoppers. These are used for extracting the ingredients of cultivated marijuana for animal experiments. If medical marijuana is to be formulated, it will be necessary to grow large quantities of marijuana with the exact same cannabinoid composition. There are many cannabinoids whose functions are still not fully understood. The grasshopper has a similar blood-brain barrier structure to humans, making it ideal for animal experiments. In another room, they were cultivating marijuana in a water tank. They were adjusting the light source and changing the nutrients in the water in order to unify the composition of the marijuana they were growing. The next room was a warehouse where a large amount of marijuana was stored, divided into stems, flowers and seeds. The stalks are used to make fiber for building materials, the flowers are used to make medical marijuana, and the oil from the seeds is used to make cosmetics. The second floor of the plantation was undergoing renovation, and the interior was being decorated with boards made from hemp stalks. Each board is about 2

x 5 meters in size, but it is so light that two adult men can lift it easily. The boards are strong and insulating, making them an excellent building material. On the third floor was the office of the researcher, where he showed us some of the cosmetics they make, and a placebo made to look exactly like a marijuana joint. When we smelled it, it had a strong odor. He said it had no effect at all and was just a normal cigarette. Mr. Pontippidann said that there would be a big move in the next week. He later told me that they had signed a contract with a company in the Czech Republic to develop medical marijuana for export to European countries. Dr. Rindom, who accompanied me, told me that this company has attracted many excellent researchers. The entry into the medical marijuana market is a huge business opportunity, and I had the feeling that it is moving towards legalization on an international scale.

### **III. Cannabis use for self-medication of mental disorders**

Since the use of medical marijuana for mental illness is not allowed in Denmark, many mentally ill patients obtain marijuana through illegal means to alleviate their symptoms. Next, let's hear from a mentally ill patient who is using cannabis for self-medication.

#### **1. Opinions of the parties**

The author met with Mr. A, a young man in his early thirties, who was dressed roughly in a T-shirt and jeans, with tattoos on both forearms, but with a friendly smile. He explained that he had paranoid schizophrenia and social anxiety disorder. It seems that his grandfather had some kind of mental illness, but no details were given. His cousin is also a bipolar patient. He was in his late teens when he became ill. He began to have auditory hallucinations and was threatened day and night by voices saying, "Everyone is trying to kill you." He had been admitted to a psychiatric hospital six times in the past, the first time for three months and the second time for six months, which is an unusually long stay in Denmark, but he said, "These days, even if I am admitted, I am discharged immediately." He seems to understand that the long hospitalization period was necessary to control his symptoms. At one point, he was taking 45 mg of olanzapine daily. He is now taking cannabis and has been able to reduce his olanzapine to 5 mg. However, since the prescription of cannabis for psychiatric disorders is not approved in Denmark at present, he is buying cannabis oil from a dealer through an acquaintance. The seller himself makes a formulation with low THC and high CBD content, which seems to be suitable for stabilizing his

symptoms. He takes two drops of cannabis oil in the morning and two drops at night under his tongue with a dropper. He no longer feels anxious in public and has been able to reduce the amount of olanzapine he takes. When he was taking 45 mg of olanzapine, he was obese due to overeating and was too sleepy to do anything, but now he is slimmer and more active. When I asked him if his doctor knew that he was using marijuana illegally, he said he did. He does not have a job, but he volunteers for self-help activities for the mentally ill, and his life is very fulfilling. Last year, he went hiking in Germany and Norway with his friends. Next year, he is planning a trip to Brazil with his family to visit his maternal relatives. He also claimed that marijuana is less dangerous than alcohol, and that there are many people who smoke a joint of marijuana before going to bed.

This is a very successful case. When trying to suppress severe psychotic symptoms with antipsychotics alone, high doses are inevitable. There is some resistance to obtaining marijuana illegally, but if the patient actually gets better, the attending physician may have no choice but to accept it.

## 2. Freetown Christiania

When I write that people who need marijuana for medical purposes are obtaining it on the black market, you

may imagine a dangerous situation that is quite criminal. However, the crackdown on marijuana in Denmark is remarkably more tolerant than in Japan. In Copenhagen, there is a hippie commune called Freetown Christiania, where marijuana is sold in broad daylight. It was originally a military facility, but when the government opened it up to the public, the hippies gathered there and started living together. Mr. B, who has lived in Freetown Christiania for more than 20 years, told me about it.

Currently, the population of Freetown Christiania is about 1,000. They build their own houses and use a solar power system for electricity. In the 1970s, there were hippie communes all over the world, but this is the only one that still exists today. In Denmark, right-wing and left-wing parties have alternated in power, but whenever a right-wing government comes to power, there are always calls to destroy Christiania. We will never use hard drugs other than marijuana, and violence is prohibited. We have built our own houses, we have jobs, and we have officially purchased the land we were renting. We are steadily negotiating with the government and protecting our autonomy.

Not only Mr. B, but also the other people living here all seem to be gentle people. The citizens of Copenhagen



must have a certain appreciation for him because he is not causing any trouble to society even though he smokes marijuana. As a hippie commune, marijuana is almost completely banned in Copenhagen. The marijuana is sold not by the residents but by gang members from outside, but they do not seem to be disturbing the security of the commune. Young people can be seen here and there smoking marijuana with impunity, but there is no sense of danger. One corner of the area faces a canal, and the surrounding area is a promenade. There are many families with small children, and the atmosphere is peaceful.

There was also a group of elementary school-aged children being led by their teacher on a tour of the facility, where children camp out for summer school. Mr. B used to smoke marijuana a lot, but he quit smoking five years ago when he started to have panic attacks. While we were interviewing him, about ten policemen came to patrol the area. Mr. B laughed and said that it was government propaganda. When I asked Mr. B about medical marijuana, he simply replied that it would be effective. In such an environment, people who needed medical marijuana could easily obtain illegal marijuana.

### 3. Psychiatrist's opinion

In addition to the opinions of those who

favor the medical use of marijuana, I would like to introduce the opinion of a psychiatrist who is directly involved in the problem of drug dependence. The first is Dr. Rindom, who was introduced in the previous chapter.

In Denmark, as in other Western countries, marijuana abuse is widespread, especially among young people; in a survey of people aged 16-44, 44.8% had smoked marijuana in their lifetime, 11.0% in the past year, and 4.6% were daily users 2). Nearly half of the population has smoked marijuana in the past, but not everyone becomes a regular user; those who quit after one smoke say, "I tried smoking marijuana because it was recommended to me at a party, but it made me sleepy and I didn't enjoy it." The majority of those who become regular users are those with some form of mental illness. Many of them are children from poor families, raised in poor conditions and traumatized. When they smoke marijuana, they are no longer bothered by the stimuli around them and can escape the unpleasant environment, even if only temporarily. Many marijuana users also suffer from mild psychosis. They complain of not being able to walk into a dark street because they feel as if someone is behind them, or not being able to get on a train because they are worried about stares. This is not a psychotic symptom, but



more of a damage related ideation. Quitting or reducing marijuana smoking was enough to eliminate the symptoms. Some of Dr. Rindom's patients are schizophrenic and use small doses of olanzapine and small doses of cocaine or amphetamines. When I asked Dr. Rindom about the pros and cons of marijuana use by mentally ill patients, he reluctantly admitted that there are many marijuana smokers in his clinic and they are doing surprisingly well. So he was reluctant to admit it. Finally, he said something interesting. "Why does marijuana exist in the first place? There are endogenous cannabinoids in the human body that act in a similar way, but why are they necessary? Isn't it possible that the calming and distracting effects are the product of a synthetic process that we secrete in times of crisis, such as war or natural disaster, to prevent serious damage to our minds?"

It is true that opium, coca, tobacco, and other drugs have a long history of helping people live in harsh natural environments. Even today, there are many people in the world who live in unimaginably harsh environments. Marijuana, hallucinogenic mushrooms, hallucinogenic cacti, and other so-called psychedelic drugs still have the potential to work on unknown parts of the psyche. It was thought that it would

be detrimental to the development of mankind if all drugs were considered dangerous and regulated in general.

#### 4. Drug addiction clinic

Denmark received a large number of immigrants from Turkey in the process of reconstruction after World War II. The southern part of Copenhagen is the area where many immigrant manual laborers settled. There is a clinic called Spaniansgade Clinic, which specializes in alcohol and drug addiction. There are six clinics specializing in addiction in Copenhagen, three of which specialize in addiction and other psychiatric disorders, and three others specializing in opiates (heroin, etc.). The Spaniansgade Clinic is a clinic specializing in addiction. The Spaniardsgade Clinic is a specialized clinic for people with multiple disorders, and offers counseling, group counseling, motivational interviewing, mindfulness meditation, and other programs, as well as housing and job placement. We interviewed Dr. Plickert, C.

The total number of patients currently enrolled is about 450, of which one-third are young drug addicts and the remaining two-thirds are alcoholics. The age of the drug addicts is 18-25 years old, and the male to female ratio is 2-3:1, with the majority being male. Most of them have had some kind of trauma. Marijuana is the most

commonly abused drug, but it is not as much of a problem as hard drugs such as cocaine and amphetamines. Smoking marijuana loosens the stereotypes that have been holding them back psychologically, and allows them to see things from a broader perspective, but for traumatized patients like the ones who come to this clinic, it only temporarily distracts them from their unpleasant environment, and does not help. After an average of 9 months of outpatient treatment, 30% of the patients reported that their lives had improved. If marijuana is legalized, it will reduce the contact between young people and criminal organizations, and thus prevent them from turning to hard drugs. The number of hard drug users would probably be reduced by half. Although psychotic symptoms can occur due to the THC content of the marijuana used, the genetic factors of the user, or environmental stress, only a small number of people are expected to develop psychotic symptoms due to the antipsychotic properties of CBD.

Like Dr. Rindom, Dr. Plickert did not seem to think much of the fact that the patients at the clinic were using marijuana. Since the use of medical marijuana for psychiatric disorders is not allowed in Denmark at present, patients buy marijuana on the black market and use it, but as long as the patients can live comfortably with it, it

does not seem to be much of a problem. Incidentally, the clinic offers acupuncture treatment to reduce craving among addicts, a program called NADA, where five needles are inserted in one ear and one between the eyebrows, and the patient is allowed to relax on the couch for 45 minutes, two to three times a week on average. The program is highly evaluated by the patients.

### 5. Psychiatric hospitals

A 30-minute train ride east from the capital, Copenhagen, brings you to Roskilde. It is a medium-sized city with a population of about 80,000, and has a quiet and relaxed atmosphere. The hospital we visited was located in a vast site, with wards and research buildings divided into different functions scattered throughout the site. There is a lush green walkway and part of the site faces the fjord. St. Hans Hospital is one of the six public psychiatric hospitals in the Copenhagen city area, and consists of a 230-bed judicial ward and a 76-bed ward for patients with multiple disorders. In the specialized ward for multiple disorders, cognitive milieu therapy (CMT) is performed. This may require some explanation. The treatment of addiction can be divided into two categories: those based on the principle of total abstinence and those based on the principle of harm reduction.

Total abstinence is based on the relatively old view of alcoholism as a biological disease in which the addict has lost control of his or her use, and the goal of treatment is abstinence. Harm reduction was developed during the Vietnam War in the 1970s, and is an attempt to self-medicate trauma, treating dependence as a modifiable behavioral abnormality rather than a disease. The goal of treatment is often determined by the patient, and complete abstinence is not required. The 12 steps, Alcoholics Anonymous, and Narcotics Anonymous are based on the principle of total abstinence, while cognitive-behavioral therapy and motivational interviewing are based on the principle of harm reduction 3). There was a time when the therapeutic community was the focus of attention in the treatment of drug addiction. In the past, therapeutic communities were the focus of attention in the treatment of drug addiction, where addicts lived together in a well-disciplined environment and modified their behavioral patterns distorted by drug addiction. Originally, there was no dedicated staff, and the patients who entered the dormitory first were expected to take care of the patients who entered later and to be a model of responsible behavior as a member of society. CMT is an inpatient treatment program that combines a form of mutual

support among patients like a therapeutic community with psychotherapy such as cognitive therapy. The duration of hospitalization is set at three months. All patients are admitted on a voluntary basis. The hospital is a three-story building, and each floor consists of a ward. All rooms are private. In the case of isolation, the entire corner of the building, which has a hall in the middle, is locked, and one nurse must accompany the patient. The number of patients on the first floor is 26. On the first floor, there are 26 patients, 20 nurses, 20 nursing assistants, a physical therapist, a counselor, and a mental health worker. Each shift has a total of eight nurses and nursing assistants, so the staffing is quite fortunate. Smoking is allowed on the balcony, but no one smokes secretly in their rooms, so you have to manage your own lighter. The most common inpatients are those with schizophrenia and marijuana dependence. The other patients are those who are addicted to heroin, cocaine, or amphetamines and have depression or other mental disorders. The average age was 45 years old. Many of them have personality problems, but these problems often disappear after the addiction treatment is completed.

When I asked Dr. Krarup, J., the psychiatrist who showed me around the facility, and four or five other

psychiatrists and counselors what they thought of medical marijuana, the response was far from positive. He just frowned and did not say much. There is some dissatisfaction, but it seems that it is unavoidable as the trend is moving towards the legalization of medical marijuana. Compared to the doctors in the city clinics that I have seen in the previous two chapters, I got the impression that many of them have a negative feeling. This may be due to the difference in their original treatment philosophy. As mentioned above, therapists who take the position of harm reduction do not seek complete abstinence from drugs, and are satisfied if the patient's lifestyle improves. Inevitably, they are also more tolerant of the use of illegal drugs. Even if a patient obtains and uses marijuana by illegal means, they do not consider it a problem as long as the patient's life is stable. On the other hand, the total abstinent therapist is very strict about the patient's drug use because he or she wants the patient to abstain from drugs first. On the other hand, therapists who take the position of total abstinence are very strict about the use of drugs by their patients, and would not even consider the use of marijuana for medical purposes.

#### IV. Discussion

The more I interviewed, the more I

came to believe that there is no evidence to completely deny the legalization of medical marijuana. Due to the limited period of time, I may have been biased in interviewing people with a relatively favorable position, but even those with a skeptical position often reacted emotionally and did not have empirical evidence. The author has treated many cannabis psychopaths and found them to be more difficult to treat than methamphetamine psychopaths. While most patients with methamphetamine psychosis report a strong rejection of methamphetamine, at least immediately after the psychotic symptoms have resolved, patients with cannabis psychosis often continue to affirm their smoking of cannabis. The content of psychotic symptoms often includes the belief that they have encountered or been guided by supernatural beings such as gods, guardian spirits, or ancestral spirits, and although the hallucinations themselves seem to disappear after treatment with antipsychotics, the delusions are not easily corrected. The feeling of being protected by a supernatural being must have been very important for him. Patients with methamphetamine psychosis are forced to use large doses of antipsychotics when they are first admitted to the hospital, but when they are discharged, they use only very small doses of

antipsychotics. Patients with cannabis psychosis continue to talk about their delusions and glorify cannabis, so it is difficult to reduce the amount of antipsychotics prescribed 10). However, medical marijuana, with its low THC content and high CBD content, has a low risk of developing psychotic symptoms and may have a significant effect on various psychiatric disorders. However, a well-controlled environment is necessary to prevent those who prefer the consciousness-altering effects of THC from obtaining marijuana through illegal means.

### Conclusion.

This paper is not a discussion of the pros and cons of medical use of cannabis, but a report on the current status of medical use of cannabis in Denmark. Although we have not covered all the issues adequately, we have ventured to do so because so far there are no reports by psychiatrists with experience in treating addictive psychosis. If you are interested in reading this paper, please refer to other findings.

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