

Review article

Political economy of cannabis in Thailand

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Cannabis has been classified as category 5 addictive herb. However, the new trend of the world has found it useful resulting a change of policy by the Ministry of Public health in Thailand, i.e., to follow the California Model that allows cannabis to be grown no more than seven in a household.

This review article aimed to explore the origin of policy on cannabis of the current government of Thailand, especially under the new Minister of Public Health, its applications, obstacles and plausible solutions and the policy suggestion for deregulation of cannabis.

Literature reviews were conducted on history of cannabis, ingredients, risks and benefits of cannabis as well as in-depth interviews of three stakeholders in the field of cannabis pharmacy, naturopathy and national policy making in the Ministry of Public Health.

Cannabis is a useful pharmaceutical plant, easily grown in Thailand, and deserved to be deregulated following the trend in the West. However, in Thailand it should not be used freely but controlled and regulated. It will take decades for cannabis extracts to be used in conventional Medicine, but in Thai Traditional Medicine the formula that use cannabis have been known in Thailand for no less than 300 years at least since the reign of King Narai of Ayutthaya. Therefore, it should be encouraged and will be of great benefit to the economy.

Cannabis should definitely be banned from recreation uses, and the government should encourage more research and development of cannabis to be used for medical purposes, both in the Thai Traditional Medicine and Conventional Medicine. The former has an advantage that in the production of cannabis-based traditional medication does not require trials in animal and human models; the pharmaceutical company can directly jump to the production of the medication right away as it has been used in Thai society for hundreds of years. The latter will need more time and financial supports from investors and international community as mandated by the protocol for pharmaceutical industry. Nevertheless, for safety of the consumer quality of cannabis cultivation, storing and production have to be controlled by the government.

Keywords: Cannabis, political, economic, Thailand, Thai Traditional Medicine.

Cannabis or marijuana is a tropical plant known in Thailand as *kanja*, following *ganja* in Hindi and Sanskrit, sometimes called Indian Hemp. It is a flowering plant that belongs to the Cannabaceae Family. Its origin is Middle Asia and has scattered to various parts of the world. Historically, cannabis has been known to be used for over four thousand years for various purposes such as animal feeds, cooking, recreation, etc. The scientific name of the plant is *Cannabis sativa* L. subsp. *indica*. The plant has male and female genders (dioecious plant). *Kanja* has over 100 chemicals known as cannabinoids. Among these, tetrahydrocannabinol-THC is the most potent brain stimulant. The concentration of tetrahydrocannabinol

(THC) as well as the location it grew, method of its cultivation, its subspecies all these determine the effects on the nervous system. Flower heads and leaves are the parts of the plant where cannabinoids are concentrated.

For hundreds of years, this country has been familiar with the plant and the Thai people have learned to use cannabis in many ways such as in Thai Traditional Medicine, cannabis is the main ingredient for herbal medicine for the treatment of depression, anxiety and insomnia. Also, in cooking cannabis is known to add special flavor in foods and soups; smoking cannabis for relaxation and recreation is known all over the country. In smoking cannabis, its leaves are flamed in a pipe made out of bamboo. Cannabis smoke is known to create a sense of light-headedness, hilarity and entertainment. The ban on *kanja* was introduced to the country in 1950, following the international regulation. *Kanja* has been classified as category five of addition together with *kathom*

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(another kind of plant popular in the South of Thailand as nervous stimulant that galvanizes hard laboring). Ownership of *kanja* and *kathom* is punishable by criminal court. For over sixty years, *kanja* has been banded from medical use and the plant has been taken out of the pharmacopeia of Thai Traditional Medicine.

In 2017, a new movement has emerged in Thailand, not only to deregulate the legal control of the plant but also to develop it into a new economical agricultural plant. One of the most famous institution in Thailand is Rangsit University which has been the pioneer in developing *kanja* into pharmaceutical products suitable for its modern uses. Rangsit University has launched several projects, not only in pharmacy and pharmaceutical industry but also socially to promote the use of *kanja* for medical purposes in whatever way possible, as well as to educate the public to understand the use of the plant as a new form of agricultural industry. Adding to this is the Bhumjaithai Party, led by H.E. Anutin Charnvirakul, has adopted the policy for deregulation of *kanja* and production for medical purposes following the California Model. The Bhumjaithai Party has announced the policy to the people, and in return, it has been elected in Thailand's General Election of March 24th, 2019 with 52 seats in the Parliament. Charnvirakul is now serving as the Deputy Prime Minister and the Minister of Public Health.

The author has the privilege of interviewing key persons in this movement, i.e., from Rangsit University, Assistant Professor Dr. Thanapat Songsak, the Dean of the College of Pharmacy, Mr. Panthep Poorpongpan, the Dean of the College of Antiaging, who also serves as the Secretary of the Cannabis Committee who has written extensively about the use of cannabis in public health, and above all Dr. Anunchai Assawamekin, senior officer of the Minister of Public Health who is responsible for the national policy on cannabis.

The paper covers brief history of *kanja*, the discovery of its pharmaceutical components such as THC and cannabidiol (CBD), the policies of developing *kanja* into pharmaceutical products (both in conventional and traditional medicines), the problems of launching the policy and the possible solutions to the problems.

Chemical ingredients of cannabis

Although *kanja* has long been known and widely used in human history, the pharmaceutical ingredients

of cannabis have been extracted in 1940. There are three main species of cannabis, namely: *Cannabis sativa*, *Cannabis indica* and *Cannabis ruderalis*. The plant is commonly known according to various locations around the world as cannabis, marijuana, marihuana, hemp, kief, weed, pot, hashish, *kanja* and bang. Hashish is sometimes referred to dried and compressed cannabis oil. Chemical ingredients related to cannabis are collectively call cannabinoids which are classified into three categories:

- 1) phytocannabinoids which are chemicals that are extract from natural cannabis;⁽¹⁾
- 2) endocannabinoids which are neuro transmitter in the animal nervous system that react to cannabinoid receptors;⁽²⁾ and,
- 3) synthetic cannabinoids which are cannabinoids synthesized from laboratory. In nature there are more than 750 kinds of chemical substances extracts from cannabis, and over 104 of them are classified as cannabinoids. Among all these substances, THC, CBD and cannabiol (CBN) are the most outstanding. CBD is one of 113 identified cannabinoids in marijuana and accounted for 40.0% of the plant's extract. So far, in 2019, clinical research of CBD has found its use in the treatment of anxiety, cognition, movement disorders, and pain. However, according to Songsak, there are no sufficient information to identify the exact mechanism of the substance in its treatment.

According to Songsak, CBD can be administered into the body in many ways, i.e., inhalation of cannabis by smoking or vapor as in aerosol spray into the mucosal membrane of the oral cavity, ingestion by oral intake, and intravenous injection, recently developed by Chemists of Rangsit University. So far, CBD does not have the psycho-activity as THC and CBN. For safety, the College of Pharmacy has produced micro-dose of cannabis solution extracted by coconut oil that the user may drop under the tongue for the use of insomnia medicine. But the difficulty in the use of this oil is that the patient has to titrate the amount of the micro-dose themselves as the amount of cannabis oil can greatly vary from one to another, said Songsak.

In the United States (US), the cannabidiol drug, Epidiolex has been approved by the Food and Drug Administration in 2018 for treatment of two epilepsy disorders associated with Lennox-Gastaut syndrome or Dravet syndrome.⁽³⁾ However, other CBD formulations still remain illegal for medical prescriptions.

In 2019, a team of researchers of the College of Pharmacy, Rangsit University has identified CBN as active agent for the treatment of non-small cell lung cancer. They have successfully conducted the trial *in vitro* and animal models, and soon human trials will be commenced, according to Songsak.⁽⁴⁾

Also, Songsak illustrated that one of the most serious adverse effect of cannabis is the plant's affinity to heavy metals and poisonous chemicals such as insecticides it draws from the ground. Users have to be aware of the source of *kanja*, i.e., where it was cultivated, and the quality of soils whether it is organic or not. Otherwise, the consumer will be exposed to poisoning from heavy metals or insecticides. Therefore, cultivation or farming of cannabis needs to be carefully controlled for safety of the people.

Currently, the news about the success of the College of Pharmacy of Rangsit University has drawn academics from Japan and South Korea for visit the faculty. However, a lot more studies have to be launched in order to fully develop cannabis for medical use. This includes building facilities for animal experimentation and human trials. The whole process will take years before the first pharmaceutical product can be manufactured from Rangsit University. Songsak confirmed that the main obstacle for development of cannabis at Rangsit University is financial. The college is, therefore, looking for new partnerships and financial supports from international community to develop different products from cannabis.

Benefit of cannabis

Cannabis is now accepted for its use in Medicine. In the United Kingdom (UK), many extracts from cannabis are manufactured as medication for various illnesses, such as multiple sclerosis. The medications are accepted in many countries including Australia, Austria, the Netherland, Spain, etc. Cannabis extracts are used for the treatment of neuropsychiatric symptoms, loss of appetite in cancer, etc. Some countries allow cannabis farming for medical use, such as Canada, Israel, The Netherland, the UK, Switzerland, and some states in the US. Many countries have already used cannabis in the practice of Medicine. The world consumption of cannabis has risen from 23.7 tons in 2011 to 77 tons in 2014. A lot of scientific articles have been published on various components of cannabis all of which have great potentialities to be developed for medical use.

Risk of cannabis

Studies in laboratory animals and human clinical trials found that the rate of cannabis addiction is between 8.0 – 10.0% of all cannabis consumers. In Australia, it has been found that most cannabis addicts are not associated with addictions to other drugs such as methamphetamine or heroine, majority of drug addicts start their addiction with cannabis. In all, THC is the main principal psychoactive phytocannabinoid.⁽⁵⁾ Other substances that have pharmaceutical effects are, namely: cannabidiol, cannabinol, cannabichormene, cannabigerol, cannabicyclol, cannabitriol, cannabivarianm cannabidivari, cannabinolic acid and delta-9-tetrahydrocannabirarin (Δ^9 -THCV).⁽⁶⁾ Among all these substances, cannabidol and Δ^9 -THCV have anti-addiction efficacy as they compete with THC to catch with its receptors (CB1), this directly decreases the psych-neurological effect of THC.

In all, *kanja* can be dangerous to health if it is not properly administrated. The addiction problem can easily affect the society. This is the reason why many countries have created strict regulations on the plant. The adverse effects of cannabis include:

- 1) Respiratory system: irritation to the respiratory system, causing coughs, chronic obstructive pulmonary diseases (COPD), and cancer;
- 2) Cardiovascular system: increases heart rate, stroke, heart attack;
- 3) Cognitive function: shortens concentration, short-term memory disturbance, falsehood in time perception, problems in high cognitive functioning, etc.
- 4) Psychosis: worsens mental disorders, such as schizophrenia;
- 5) Dependence syndrome: long-term use of cannabis leads to addiction in 1 of 10 users. The ratio increases to 1 of 6 in adolescent users. Cannabis addicts cannot stop their need for it which leads to withdrawal symptoms.

As psychoactive drug, cannabis intake leads to euphoria, relief of anxiety, sedation and drowsiness. In cannabis smokers' plasma, THC's half-life is 2 hours. If the smoking is 5 - 7 min long, THC is detected at the amount of 10 - 15 mg and Δ^9 -THC at 100 mg/liter. Oral intake of cannabis has less effect on the nervous system as THC does not well dissolved water. Concern is noted on CBN, Δ^9 -THC as they are psychoactive agents.⁽⁷⁾ At present, there are numerous projects studying various chemicals in cannabis and have found that a lot of them have

pharmaceutical property suitable to be developed for medical use.⁽⁸⁾

Rangsit University and cannabis projects

In 2016, the President of Rangsit University, Dr. Arthit Aurairat, initiated the Cannabis Project at the College of Pharmacy with a discussion with the Dean of the College, Assistant Professor Dr. Thanapat Songsak. The College started the project on cannabis in medical use by setting up a team of scientists to research on the herb. Since, *kanja* in Thai law is category five of addict (together with *kathom*) finding for appropriate amount of *kanja* was difficult.

On the other hand, Mr. Panthep Poorpongpan on January 31, 2020, said that he became interested in naturopathy from 2001 because of his health reason. He tried to minimize the use of drug, and found that Thai society has misunderstood naturopathy. Since 2011, as a journalist he has been promoting naturopathy, e.g., the use of coconut oil, detoxification, nutrition, exercise, etc. Until, 2018 a respected person of him was gravely ill with terminal intestinal cancer, she was hospitalized and the patient was over 70 years, and the tumor had metastasized to many places in her body. He found cannabis as herb of choice that it could stop the mastitis of cancer cells. He extracted the herb for her use with ethanol and the patient got better. She received palliative care and finally passed away in peace. This experience made him more interested in cannabis, so he started sharing the knowledge of cannabis for medical use to the public. This was in trend in the Internet about many cases that patients treated themselves with cannabis extract, published on the website of the Manager.⁽⁹⁾ According to Poorpongpan, cannabis can be addicted but as not easy as most people imagine. Withdrawal symptom of cannabis dependence is rather mild, except in young adults. Also, the benefit of cannabis outgrows its risks and could be of great benefit for the people.

Dr. Arthit Aurairat, the President of Rangsit University, was interested and appointed him the Dean of the College of Integrative Medicine and Anti-Aging. Rangsit University has done a lot of research projects on cannabis, most advanced in the country. In the past Thailand has long enjoyed the use of cannabis, *kathom* and even opium in productions of traditional medicine for a long time since Ayutthaya Period. Opium was problematic since the reign of Rama IV. The king allowed importation of opium from English merchants but it had to be monopolized by the

government. In reign of King Rama V of Siam, the use of Western Medicine became more and more important, according to Poorpongpan. Rockefeller Foundation was prominent in Rama VI, and Thai Traditional Medicine was suppressed. Hemp was used for production of energy for food, since hemp has a lot of oil and fiber. In the reign of Rama VI, *kanja* was treated as addictive, same as hemp. Teaching of Thai Traditional Medicine became obsolete until recently when the Thai government endorsed Thai Traditional Medicine as legitimate system of health care. Together with this, the Department of Thai Traditional Medicine was established in the Ministry of Public Health.

After 1932 (2475 BE), cannabis came back again for medical use, according to Poorpongpan. The minister of interior gave licenses for doctors to brew medicine for specific doctor, according to Poorpongpan. In 1979 (2522 BE), cannabis was classified as addict enforced by international law, and hence banned from Thai Traditional Medicine, more than 90 recipes of Thai medicine contain cannabis. A Thai Traditional recipe contains opium to counter balance the heart stimulating effect of cannabis, according to Poorpongpan, so it cannot be allowed to be made. *Kathom* was also classified as addictive; Thailand is the only country that classified *kathom* an addictive. *Kathom* has alkaloids which stimulate and reduce pain. It is a good news that *kathom* is now declared as non-addictive and has been removed from the Addictive Act of 2021 (2564 BE).⁽¹⁰⁾

Currently, many state-run hospitals have large stocks of cannabis extracts produced by the Abhaiphubet Foundation, Pharmaceutical Organization of Thailand, but they are rarely prescribed for patients as the doctor have to base their order under the criteria given in their medical literatures, according to Poorpongpan. However, few patients have benefited from it; no doctors want to take risk. In Thailand, cannabis is more strictly controlled by law than morphine. For example, cannabis has to be transported via ambulance tightly controlled in the vehicles or even monitored by closed-circuit television whereas morphine received no requirement like this. In spite of the fact that it is harder for cannabis to be addicted whereas it is much more easy for morphine or opioids to be addicted. The problem is not the nature of cannabis but political motivation, hidden in conventional medicine. Currently, the government controls production of cannabis. Doctors

are allowed to prescribe cannabis for medical use, but they have not been trained to do so, as all the indications are based on the Western Medicine and its text books to prescribe it means they are exposed to unnecessary risks.

Although, the United Nation and World Health Organization have accepted Thai Traditional Medicine as legitimate and effective in the treatment of people, Thai Traditional Medicine has a long way to go. It is not well accepted by doctors, nurses and healthcare professionals who were trained in Western style of Medicine, according to Poorpongpan. Nevertheless, productions of Thai traditional drugs do not require trials in animal or human models. Thai Traditional Medicine has an advantage over the Western as it can produce in much a shorter time and at much lower cost, according to Poorpongpan. But quite a few problems remain that the government still has tight control over the plantation, stocking, purchasing, production and selling of cannabis-based Thai traditional drugs. Every single step requires a license from the government. In this case six licenses are needed for manufacturing a cannabis-based Thai traditional drug. Few entrepreneurs know about this, according to Poorpongpan.

One interesting case is that of Ajarn Deja Siripat a local citizen of Suphanburi Province that happened in 2019, said Poorpongpan. Accordingly, Siripat who distributed cannabis oil to patients free of charge was accused and arrested. This became a big news. The government has given him amnesty. His cannabis oil has been accepted as a part of local herbal medicine. Siripat is now accepted by village doctors who can distribute cannabis oil legally. Still he is the only village doctor who can distribute cannabis oil to any patient in the country free of charge at the Cannabis Clinic in the compound of the Ministry of Public Health.

As for the other kind of cannabis, hemp. There are two species of hemp, one with high fiber, and the other is rich in cannabis oil. Hemp normally contains 1.0% of THC. In Kentucky, a farm of hemp had 1.2%, so the whole plantation was burnt down by law enforcement. According to the law, THC must not be more than 1.0% in any cannabis product. But according to Poorpongpan, the high concentration of THC over 1.0% like in the case of Kentucky farm, the solution product should not be destroyed but diluted so that the THC concentration is lower than 1.0% and meet the requirement of the law. But CBD should

always be liberalized as it has no psycho-neural activity, said Poorpongpan. According to the opinions of the three experts interviewed for this paper emphasized that cannabis should be allowed for medical use only and never for recreation.

In spite of the fact that H.E. Anutin Chanvirakul announces the policy that promotes the California Model with registration and not disclosed to public and every household is allowed to grow as many as six cannabis plants. Planting cannabis, storing and purchasing of cannabis are all illegal and punishable by imprisonment, the government of Thailand still maintains its tight control on cannabis, said Poorpongpan. And according to him, the government should not be an entrepreneur but a regulator of cannabis. Any community enterprise interested to produce Thai traditional drug cannot do it alone but to team up with a local government organization. And every step of the production from growing cannabis plants, storing, manufacturing is mandated to have a license given by the government. The board that controls the licensing is comprised of 27 people all appointed by the government, said Poorpongpan. He also emphasized that the government regulation has to be more open and the people should be more involved.

Thai government policy on cannabis

Dr. Anuchai Assawamekin, a senior officer of the Minister of Public Health who is responsible for the policies of cannabis explained that the government policy on cannabis started in two years ago with the previous government under the administration of Dr. Piyasakon Sakonsatyathon. He was invited overseas by the Pharmaceutical Organization to investigate the use of cannabis for medical use. Having returned to Thailand, the minister started the project to develop cannabis for medical use. Assawamekin joined the committee on Feb 8th, 2020.

According to Assawamekin, the law covering the use of cannabis has been amended that allows cannabis products to be administered to a patients according to the prescription of the doctor, villager doctors, under a protocol of a research project, and under special access scheme (certain parts of the plant without research evidence). However, most people in Thailand are aware of this, said Assawamekin. And according to him, new policy should be launched based on reality not from expectation. New article on cannabis should be developed in order to enable people

at the grass-roots to develop their own enterprises that use cannabis products.

Currently, there are problems of the supply chains in the production of cannabinoid drugs. Entrepreneurs are still puzzled by the new regulations of the government on cannabis. No private enterprise is allowed to start their business on cannabis without any cooperation or partnership with government organization. But no government officers are trained in business, and there is no interest for a governmental organization to have their for-profit enterprises. Therefore, there is a gap in the business model, as for how the new community enterprise should be organized and administrated, i.e., what will be the appropriate mode of relationship between the private sector and the public sector, said Assawamekin. In his opinion the supply chain should be horizontal and not vertical. It should also be in favor of the libertarianism or free market economy where competition is encouraged. In other countries, the supply chain is complete and horizontal. "We are trying to develop local model for community enterprise that use cannabis product; cannabis and hemp will soon be new economical plants of Thailand," said Assawamekin.

The policy of the Minister of Public Health is clear, i.e., for the promotion of the public health and commercialization of cannabis for grass-root economy. In this case, medical prescription of cannabinoids is legalized. For two years the government is still monitoring and evaluating the use and abuse of cannabis. Thai Traditional Medicine can produce cannabis based-drugs but the process is still difficult as it is overregulated.

The Pharmaceutical Organization has currently done a lot in terms of cannabis oils and cannabinoid production as well as the Abhaiphubet Foundation and other government-run hospital and institutes but the fact remains that they serve the Ministry of Public Health. These organizations have no idea of entrepreneurships, said Assawamekin. As by law, the entrepreneur process depends on private organization to work with government-run organization, but governmental organizations cannot do the marketing. Hopefully, the gap can be soon fulfilled. "Approximately, it will take six more months to solve the problems," said Assawamekin.

Discussion

Cannabis has been known in Thailand for

hundreds of years. Thai people have used cannabis for recreation such as for smoking and cooking. The plant has also been used as the main ingredient in many recipes of Thai Traditional Medicine for treatment of many illnesses such as insomnia and depression. The plant has been classified as addictive of category five together with *kathom* (a stimulant plant common in the South of Thailand). Since cannabis is illegalized, all productions of cannabis in Thai Traditional Medicine are completely banned. Growing and keeping of cannabis died out of Thailand for decades. The global movement that reviews the use of cannabis has thrown a new light on the herb. Cannabis is now legalized in many countries in Europe, America and Australia. Commercialization of cannabis is in progress in many forms which include for medical uses, drinks and recreation. Researches in different ingredients of chemicals in cannabis are in progress; the world will soon see different kinds of cannabis productions from various companies worldwide.

As for Thailand, the cannabis movement has breathed a new life into cannabis business, as it is now promoted by the policy of the Ministry of Public Health. Not only that it will be used for public health but also for boosting the local grassroots economy of the whole country. The new rules of the Ministry of Public Health accommodate the local industries based on cannabis productions which agree with the 20-year national strategies. Nevertheless, there are many obstacles lying ahead for the government to launch the policy to its fruition. One of the problems is the clarity of the policy of the government as the policy is very complicated and too difficult for the people at the grass-root level. Moreover, community enterprises are not allowed to have complete production of cannabis products except they join with a government agency. According to Thai laws, a community enterprise may collaborate with a district hospital to run cannabis plantation and produce any product from the plant. Nevertheless, no government officers in Thailand are trained to run any business enterprise, so it is too early for any local Thai farmer to be aware about the issue. In practice, no local business on cannabis has been done for production of medical cannabis products. Also, one needs at least six licenses in Thailand to run a complete business of cannabis, especially Thai Traditional Medicine.

Conclusion

Kanja, cannabis or marijuana is a potential economic plant for Thailand and the world. The plant has been used as a part of the main ingredient in Thai Traditional Medicine as well as for recreation activities and cooking. The introduction of the Western Medicine to the country as well as modern international law and regulation have limited the use of cannabis. It has been classified as Category Five of addictive agents in Thailand. All the medical and herbal recipes of Thai Traditional Medicine became obsolete and no longer produced or manufactured.

The global movement that began in 2018 really bring cannabis into public attention again has swept throughout the country. The former Minister of Public Health, Dr. Sakon Sakonsatyathorn has initiated the project to bring cannabis research into existence after his visit to an international conference. At Rangsit University, the Dean of the College of Pharmacy has been instigated by Dr. Arthit Aurairat the President of the university to start a research on cannabis for medical use, and also Poorpongpan who has great enthusiasm in naturopathy was called upon by Aurairat to work on cannabis as a possible active ingredient for the treatment of many chronic illnesses. The university has produced numerous pharmaceutical products from cannabis, and has successfully found that CBN which is one of the main ingredients in cannabis has anti-cancer effect, successful proved in the *in vitro* trials and animal models. This is one of the greatest discoveries in the cure of cancer.

Moreover, H.E. Anutin Chanvirakul, the leader of Bhumjaithai Party, the current Deputy Prime Minister and Minister of Public Health has declared his policy to deregulate the cannabis for medical use. This includes the adoption of the California Model for cannabis that allows each citizen to plant 6 cannabis plants at home. From the beginning of 2020, Thailand has seen many laws regarding cannabis has been amended. Hemp, which belongs to a species of cannabis, can be farmed with some control by the Food and Drug Administration (FDA) of Thailand. Cannabis clinics are established in the Ministry of Public Health for free distribution of cannabis oil for the people. Cannabis farming is spreading in various parts of Thailand. All these are not for recreation but only for medical use.

As for conventional medicine, the development of cannabis for medical use, although scientifically approved, will take many years and a lot of budget

of investment which is beyond any capability of pharmaceutical company in Thailand. The other more practical venue still open, however. The Thai Traditional Medicine is open for cannabis use. Many of the pharmaceutical recipes can be manufactured and marketed in mass. Especially, cannabis oils from hemp that have THC lower than 1.0% can be applied into the medicine. The current law that regulates the farming, stocking and manufacturing of drugs with cannabis oils have been amended in order to accommodate the need of the Thai Traditional Medicine pharmaceutical companies. Simple drugs for the treatment of mental depression and insomnia can be manufactured in months. This model of business can be immediately launched. Thai people can enjoy better quality of life with lower cost. The market price could worth billions of Thai baht per year.

Cannabis farming and production of cannabis oils can easily lead to recreation use of cannabis. This can easily cause problems of cannabis addiction which can further lead to other form of drug dependence. An appropriate choice to solve this problem is to educate the public, especially the youth to understand the risk and benefit of cannabis. Use of cannabis has to be limited to medical treatment only.

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Conflict of interest

The author, hereby, declares no conflict of interest.

References

1. Russo EB. History of Cannabis and its Preparations in Saga, Science, and Sobriquet. *Cham Biodiers* 2007; 4:1614-48.
2. Li HL. An archeological and historical account of cannabis in China. *Econ Bot* 1974; 28:437-48.
3. Yoanna MD. What makes the manufacture of hash oil so dangerous [Internet]. 2014 [cited 2017 January 12] Available from: <http://www.cpr.org.new/story/what-makes-manufacture-hash-oil-so-dangerous>
4. Madras B. Update of cannabis and its medical use [Internet]. 2015 [cited 2016 Dec 25]. Available from:

- http://www.who.int/medicines/access/controlled-substance/6_2_cannabis_update.pdf.
5. Risk and benefit of cannabis for medical use. <http://www.ncbi.nlm.nih.gov>, June 29, 2017.
 6. Auriol E, Mesnard A, Perrault T. Defeating crime? An economic analysis of cannabis legalization politics, April 2, 2019 3. <http://www.fda.moph.go.th>. January 31, 2020
 7. The Royal Gazette, May 26, 2021 (2564 BE).
 8. The Seventh Narcotics Act of 2019 (2562BE). http://www.fda.moph.go.th/sites/Narcotics/Laws/T_0001.PDF
 9. Scuderi C, Filippis DD, Iuvone T, Blasio A, Steardo A, Esposito G. Cannabidiol in Medicine: A review of its therapeutic potential in CNS disorders. *Phytotherapy Res*;23:597-602.
 10. Thaupachit V, Kasemsomborn N. The use of cannabis in medicine. *J Pharmacy Isan* 2017;13:1-4. (Thai)