



REVIEW ON MEDICINAL MARIJUANA: THERAPEUTIC POTENTIAL

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INTRODUCTION

Marijuana is the name given to the dried buds and leaves of varieties of the cannabis sativa plant, which can grow wild in warm and tropical climates throughout the world and be cultivated commercially. It goes by many names, including pot, grass, cannabis, weed, hemp, hash, marihuana, ganja and dozens of others.^[1]

KEYWORDS: Marijuana, Ganja, Appetite stimulator, Nausea, Vomiting.

Active ingredients in marijuana

Scientists have identified many biological active compound in marijuana. These are called cannabinoids. The two best studied components are the chemical delta-9-tetrahydrocannabinol (often referred as THC) and Cannabidiol(CBD), other cannabinoids are being studied. cannabinoids are chemicals related to delta-9-tetrahydrocannabinol(THC), marijuana main mind altering ingredient that makes people high.^[1]

Pharmacology of cannabis and cannabinoids

Besides THC, the strongest psychotropically active component, cannabis contains numerous other phytochemicals.^[2] Most of the effects of cannabis preparations are based on the agonistic action of THC on various cannabinoid receptor.^[3] Some effects of cannabis preparation are caused by the action of cannabinoids other than THC. For instance, cannabidiol(CBD) after THC, the cannabinoids that occurs in the highest concentration, in many strains of cannabis possess antiemetic, neuroprotective and anti-inflammatory properties. CBD's complex mechanism of effect include an antagonistic action on the CB1 receptor, stimulation of Vanilloid-1-receptor inhibition of the hydrolysis of anandamide^[4] and activation of nuclear receptor PPAR-gamma.^[5]

Therapeutic potential

Cannabis preparation exert numerous therapeutic effects. They have antispastic, analgesic, antiemetic, neuroprotective and anti-inflammatory actions and are effective against certain psychiatric diseases. Currently, however, only one cannabis extract ia approved for use. It contains THC CBD in a 1:1 ratio and was licensed in

2011 for treatment of moderate to severe refractory spasticity in multiple sclerosis(MS). In june 2012 the german joint federal committee(JFC, Gemeinsamer Bundesausschuss) pronounced that the cannabis extract showed a "slight additional benefit" for this indication and granted a temporary license valid up to 2015.^[6] The cannabis extract, which goes by the generic name nabiximols, has been approved by regulatory bodies in Germany and elsewhere for use as a sublingual spray. In the USA, dronabinol has been licensed since 1985 for the treatment of nausea and vomiting caused by cytostatic therapy and since 1992 for loss of appetite in HIV/Aids-related cachexia. In Great Britain, nabilone has been sanctioned for treatment of the side effects of chemotherapy in cancer patients.^[6]

- 1) Nausea and Vomiting: Medical cannabis is somewhat effective in chemotherapy-induced nausea and vomiting (CINV) and may be a reasonable option in those who do not improve following preferential treatment. Comparative studies have found cannabinoids to be more effective than some conventional antiemetics such as prochlorperazine, promethazine, and metoclopramide in controlling CINV. A 2010 Cochrane review said that cannabinoids were "probably effective" in treating chemotherapy-induced nausea in children, but with a high side effect profile (mainly drowsiness, dizziness, altered moods, and increased appetite).^[7]
- 2) HIV/AIDS: Anorexia, early satiety, weight loss and cachexia are prevalent in late stage cancer and advanced HIV disease, but there are few effective treatments. Trials in AIDS patients with clinically significant weight loss indicated that Dronabinol

5mg(International Non-proprietary name for trans-delta-tetrahydrocannabinol) daily significantly outperformed placebo in terms of short term appetite enhancement (38% Vs 8% at 6 weeks) and that these effects persisted for up to 12 months^{[8][9]} but were not accompanied by significant differences in weight gain, perhaps because of disease associated energy wasting.

- 3) Pain: cannabis appears to be somewhat effective for the treatment of chronic pain, including pain caused by Neuropathy and possibly that due to fibromyalgia and rheumatoid arthritis.^[10] In palliative care the use appears safer than that of opioids.^[11] A 2014 review found limited and weak evidence that smoked cannabis was effective for chronic Non-cancer pain. The review recommended that it be used for people for whom cannabinoids and other analgesics were not effective.^[12] A 2015 meta analysis found that inhaled medical cannabis was effected in reducing neuropathic pain in the short term for one in five to six patients.^[13]
- 4) Neurological Problems: The efficacy of cannabis in treating neurological problems, including multiple sclerosis, epilepsy, and movement problems, is not clear.^[14] Studies of the efficacy of cannabis for treating multiple sclerosis have produced varying results. The combination of Δ 9-tetrahydrocannabinol (THC) and cannabidiol (CBD) extracts give subjective relief of spasticity, though objective post-treatment assessments do not reveal significant changes.^[15] Evidence also suggests that oral cannabis extract is effective for reducing patient-centered measures of spasticity.^[16]
- 5) Other indications : Small randomized controlled trials have shown positive effects of cannabis preparations in, for example, the following diseases and symptoms:
 - Bladder dysfunction in MS.^[17]
 - Tics in Tourette syndrome.^[18]
 - Levodopa-induced dyskinesia in Parkinson's disease.^[19]

Positive effects of cannabinoids against many other diseases and symptoms have been reported, but only in case reports and small open, non-controlled studies, so no firm conclusions can be drawn.^[7]

Side effects: Cannabis and individual cannabinoid receptor agonists (dronabinol, nabilone) show very similar, albeit not identical, side effects. Drug users smoke cannabis principally because of the psychoactive effects that occur at doses above the individual consumer's psychotropic threshold. These acute effects are generally perceived as pleasurable and relaxing. Sensory perception is often heightened. However, the feeling of increased wellbeing can give way to dysphoria, and anxiety or panic may occur. Further acute psychoactive effects of cannabinoids are impairment of memory, reductions in psychomotor and cognitive

performance, disordered perception of the passage of time, and euphoria.^[7]

The debate continues as to whether high consumption of cannabis has long-term consequences on cognitive performance. On the basis of the current data it can be assumed that only extremely high consumption at levels hardly ever used for therapeutic purposes leads to irreversible cognitive impairments.^{[20][21]} It seems quite clear, however, that the risk is much higher in children and adolescents (particularly before puberty). Therefore, the advisability of (long-term) treatment of patients in this age group with cannabinoids must be weighed up very carefully. Acutely and over the longer term cannabis may have unwanted systemic and psychoactive adverse effects that must be taken into consideration in chronic pain populations, who have high rates of co-occurring medical illness (eg, cardiovascular disease) and co-morbid psychiatric and substance use disorders. In general these effects are dose-related, are of mild to moderate severity, appear to decline over time, and are reported less frequently in experienced than in naïve users. Reviews suggest the most frequent side effects are dizziness or lightheadedness (30%-60%), dry mouth (10%-25%), fatigue (5%-40%), muscle weakness (10%-25%), myalgia (25%), and palpitations (20%).^[22] Cough and throat irritation are reported in trials of smoked cannabis. Tachycardia and postural hypotension are infrequent but caution is warranted in patients with cardiovascular disease, and possibly younger adults who intend to embark on very vigorous physical activity. At higher doses, sedation and ataxia with loss of balance are frequent.

Contraindications and preventions

Contraindications

- Abnormal sensitivity to individual components of the preparations
- Severe personality disorders and psychoses

Strict precautions in

- Pregnant and breast-feeding women, because of possible developmental disorders in the child.
- Children and adolescents (before puberty): the manufacturer of the registered cannabis extract recommends it not be used in those under the age of 18, because the data on safety and efficacy are inadequate.
- The elderly, because they are more vulnerable to central nervous and cardiovascular side effects.
- Severe cardiovascular diseases.
- Hepatitis C.
- Addictive disorders.

CONCLUSION

Evidence is accumulating that cannabinoids may be useful medicine for certain indications. Control of nausea and vomiting and the promotion of weight gain in chronic inanition are already licensed uses of oral THC (dronabinol capsules). Recent research indicates that

cannabis may also be effective in the treatment of painful peripheral neuropathy and muscle spasticity from conditions such as multiple sclerosis.^[23] Other indications have been proposed, but adequate clinical trials have not been conducted. As these therapeutic potentials are confirmed, it will be useful if marijuana and its constituents can be prescribed, dispensed, and regulated in a manner similar to other medications that have psychotropic effects and some abuse potential.

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