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Medicinal and Recreational Cannabis

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MEDICINAL AND RECREATIONAL CANNABIS

Pharmacy's role in counselling patients

*With the legalization of recreational cannabis in Canada on Oct. 17, 2018, BC Drug and Poison Information Centre pharmacist **Shelina Rayani** explores how pharmacists can counsel patients who are on various forms of cannabis.*

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When recreational cannabis becomes legalized, pharmacists will play an active role in counselling patients on appropriate use, drug interactions, management of side effects, potential addictive behaviours and contraindications.¹ This article provides an overview of medicinal versus recreational cannabis, drug interactions and factors to consider when evaluating patients.

Marijuana is the common name for cannabis.²⁻⁵ Marijuana is derived from the flowering buds of various female cannabis species.²⁻⁵ Over one hundred unique compounds known as phytocannabinoids have been isolated from cannabis. Two of these compounds have been most studied.¹⁻⁸ These are Delta-9-tetrahydrocannabinol (THC) and Cannabidiol (CBD).¹⁻⁸

THC may have some beneficial effects as an analgesic, antiemetic, appetite stimulant and muscle relaxant, but it is also responsible for the euphoria as well as most of the adverse

effects associated with cannabis.¹⁻⁹ CBD has antipsychotic, anxiolytic, antiepileptic and anti-inflammatory effects.¹⁻⁹ The ratio of THC to CBD in each strain of cannabis is responsible for its therapeutic and adverse effects.¹⁻⁹ Cannabis strains used recreationally for a euphoric effect contain higher levels of THC, whereas, medicinal cannabis strains have a higher CBD to THC ratio.^{2,5,8}

There are three major species of the cannabis plant, as well as hybrids of these and other species.⁵ These are Cannabis sativa (highest THC level), Cannabis indica (greater CBD than THC) and Cannabis ruderalis (least psychogenic).⁵ Table 1 compares medicinal and recreational cannabis. Non-cannabinoid compounds found within the plant (e.g. flavonoids, terpenoids) may enhance the therapeutic effects and/or reduce the adverse effects of phytocannabinoids; this is known as the entourage effect.⁸

Another variant of Cannabis sativa is Hemp. Hemp is a cultivated variety of cannabis with negligible amounts of THC (less than 0.3%) and higher levels of CBD.^{3,10} It has no euphoric properties. Fibre from hemp stalks can be used in making paper, textiles, rope or twine, and construction materials.^{3,10} Grain from hemp can be used in food products, cosmetics, plastics and fuel.^{3,10}

TABLE 1: COMPARATIVE OF MEDICINAL & RECREATIONAL CANNABIS ^{1-9, 16-19, 22-26}

	MEDICINAL CANNABIS
POSSESSION LIMITS	<ul style="list-style-type: none"> • The lesser of a 30-day supply or 150 grams of dried marijuana or equivalent amount if in another form. • Formulas are available to determine how many plants can be grown based on the daily quantity of dried marijuana authorized in the registered person's medical document.
INDICATION	<ul style="list-style-type: none"> • Spasticity from multiple sclerosis • Neuropathic pain • Chronic pain (3rd line agent) • Specific pediatric seizure disorders • Antiemetic post chemotherapy
CANNABINOID RATIO	CBD > THC (less psychoactive)

TYPES	<ul style="list-style-type: none"> • Phytocannabinoids (No Drug Identification Number (DIN) or Natural Product Number (NPN)) • Synthetic cannabinoids (DIN, Requires prescription): <ul style="list-style-type: none"> § Nabilone (THC analogue, oral) § Sativex (THC & CBD, buccal) 	
DOSAGE FORMS	Dried cannabis, extracts in oil, tinctures, concentrates, edibles, beverages	
ROUTE	Inhalation (smoking, vaporized), oral, buccal/sublingual, topical, rectal	
AVAILABILITY	<p>LEGAL</p> <ul style="list-style-type: none"> • Require medical document from MD or Nurse practitioner • Order from Licensed Producer (LP) on Health Canada website; OR • Register self or designate with Health Canada to grow own (supplies acquired from LP); OR • Cannabis storefront dispensary IF licensed by Health Canada (currently majority are not) <p>ILLEGAL</p> <ul style="list-style-type: none"> • Illicit source • Grow own (without registration) 	<p>LEGAL</p> <ul style="list-style-type: none"> • Licensed • No passport • In B.C. government (others) • Limited • Edibles, vape juice <p>ILLEGAL</p> <ul style="list-style-type: none"> • Illicit source • Grow own
PROS/CONS	<ul style="list-style-type: none"> • Legal products are standardized for THC/CBD content, monitored, tested • Legal products will probably have a higher cost • Recreational cannabis easier to obtain • Risk of drug diversion • Risk of dependence and addiction • Safety concerns 	

PHARMACOKINETICS*	ROUTE	BIOAVAILABILITY	ONSET
	Inhalation	15% to 50%	5 to 10min
	Oral	6% to 20%	30 to 60min (Up to 1 to 3h)

* Inhaled bioavailability varies based on the number, depth, duration and frequency of inhalations, as well as the amount of time substance is held in the lung, and If vaporized, the temperature of the vaporizer. Oral bioavailability is reduced due to extensive first pass metabolism. Food may alter bioavailability.

Pharmacists evaluating patients should consider the following:

- Indication i.e. medicinal versus recreational
- Cannabis strain and THC/CBD ratio
- Route of administration and dosage form
- Dosing (start low and go slow when titrating)
- Adverse effects (depending on route, ratio and dose) ^{2-6,8,9,11-15}

ACUTE USAGE	Euphoria, hallucinations, mydriasis, conjunctivitis, sedation, increased appetite, motor impairment, agitation, tachycardia, dizziness, postural hypotension, ataxia, vomiting**
CHRONIC/HEAVY USE	Impaired brain development in youth (possibly until mid 20s), potential decline in cognitive function, anxiety, depression, paranoid ideation, precipitation of psychosis in susceptible individuals, schizophrenia as an adult
OTHER	Cannabinoid Hyperemesis Syndrome (CHS), respiratory effects (chronic bronchitis and emphysema reported in heavy smokers***, cardiovascular effects (Myocardial infarction, stroke, arrhythmias)

** Paradoxical effect

*** Many smoke tobacco concurrently. The College of Family Physicians of Canada recommends vaporization or oral ingestion rather than smoking cannabis.⁸

- Drug interactions (See Table 2)

- Labeling e.g. label edibles (gummies, brownies, cookies) for safety. Pediatric ingestion can cause significant CNS depression, hypotonia and coma.⁴
- Storage as per manufacturer insert. Keep out of reach of children.
- Contraindications: Pregnancy, breastfeeding, known sensitivity to cannabis.⁸
- Avoid use in those under age 25, history of psychosis, cardiovascular disease, and/or respiratory disease.^{2,3,8}
- Tolerance with heavy or frequent use.
- Dependence i.e. withdrawal symptoms from abrupt cessation in chronic users may include anxiety, irritability, craving, dysphoria and insomnia. The dependence risk for cannabis users is 9%, and higher for those that begin use during adolescence.^{5,6,13}
- Addiction (Cannabis Use Disorder) is the continued use of cannabis despite harm or risky behaviour, cravings and/or impaired control over cannabis use. Especially common in those who start use as adolescents.^{5,6,13}

TABLE 2: CANNABIS DRUG INTERACTIONS

THC and CBD are metabolized by CYP1A2, 2C9, 2D6, 2C19 and 3A4 ^{3,5,8,17,18,20,21,27}

INTERACTING DRUG	EFFECT	M
CYP 2C9, 2C19, 3A4 INHIBITORS ^a	Increase cannabinoid concentration	Monitor for incre effects of canna
CYP 2C9, 2C19, 3A4 INDUCERS ^a	Reduced cannabinoid concentration	Monitor for redu cannabis
CYP1A2 SUBSTRATES ^a	<ul style="list-style-type: none"> • Cannabis is a CYP1A2 inhibitor • SMOKING cannabis can induce CYP1A2 	Monitor therapy clinical effect of
Anticholinergic drugs (e.g. TCAs, sedating antihistamines)	Additive hypertension and/or tachycardia	Monitor therapy
Antipsychotics (e.g. Chlorpromazine/Thioridazine)	Marked hypotension and disorientation	Monitor therapy
Cisplatin	Case report of a fatal stroke	Avoid

CNS depressants (e.g. Alcohol, Barbiturates, Opioids, Benzodiazepines, Hypnotics)	Additive sedation and cognitive impairment	<ul style="list-style-type: none"> • Avoid • Cannabis opioids for
Disulfiram	May enhance adverse effect profile of cannabinoids	Monitor therapy
MAOI inhibitors	Possible serotonin syndrome	Caution/monitor
Nicotine (transdermal)	Tachycardia (additive), stimulant effects	Monitor therapy
Stimulants (e.g. Amphetamines, Cocaine, MDMA)	<ul style="list-style-type: none"> • Additive hypertension, tachycardia, cardiotoxicity • Prolongation of stimulants' hyperthermia 	Avoid
Highly protein bound drugs (e.g. Warfarin)	Potential to displace drugs that are protein bound	Monitor therapy

^a Refer to <https://drug-interactions.medicine.iu.edu/Main-Table.aspx> for full list of inhibitors and inducers

DISCLAIMER: This article is not a legal document and is not a comprehensive review of cannabis. It is recommended to access other available resources for more information. In addition, for the legal indications and limitations of cannabis use, pharmacists must refer to the most current and appropriate local, provincial and federal laws and guidelines.

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We are grateful to all the First Nations who have cared for and nurtured the lands and waters around us for all time, including the x?m??k??y??m (Musqueam), Sk?wx?wu?7mesh U?xwumixw (Squamish Nation), and s?l?ilw?ta? (Tsleil-Waututh Nation) on whose unceded and ancestral territory our centre is located.

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