Marijuana and Prescribed Medications

Susan A. Stoner, PhD

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Many people who use marijuana also take prescription medications for a variety of reasons, such as mental health concerns, chronic medical conditions, or acute illnesses. This is especially true of older adult marijuana users since older adults often take several prescription medications on a daily basis. People sometimes assume that marijuana is totally safe because it is a plant that has been used throughout history. This is not necessarily true. Plants can sometimes be dangerous. For people who take prescription medications and also use marijuana, it's important to realize that, even though marijuana is a plant, it has biological effects just like any other drug or medication. Due to its chemical properties, marijuana can interact with a number of other drugs or medications.

Basic Facts about Marijuana

More than 500 chemicals have been identified in the chemical makeup of marijuana. More than 100 of these belong to a family of chemicals called "cannabinoids." The most well-known cannabinoids are delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD). THC is the cannabinoid that we think is most responsible for the "high" people get when using marijuana. CBD does not make people high. CBD actually dampens the high caused by THC. Both THC and CBD are reputed to have certain health benefits.

Basic Facts about Drug Action and Metabolism

Prescription medications may act on the body in different ways. Drugs may have effects through complex body systems of receptors, transporters, enzymes, and more. Drug interactions can happen when two different drugs affect the same system. Interactions can magnify, change, or cancel out the effects of one or both drugs. The body's drug metabolism system is a common system where drug interactions occur. Metabolism is the process of breaking down and clearing the body of the drugs and medications that people take. When metabolism is enhanced, drugs are processed more quickly and may have weaker or shorter-lasting effects. When metabolism is inhibited, drugs are processed more slowly and may have stronger or longer-lasting effects.

Marijuana's Potential for Drug Interactions

Regardless of how marijuana is used (smoking, vaping, ingesting), like most other drugs or medications, THC and CBD are both metabolized by the liver. Both THC and CBD can temporarily affect the body's ability to process certain other drugs. When this occurs, those other drugs can build up in the body and have stronger or longer-lasting effects. This could potentially be harmful.

There is not a lot of research on drug interactions with inhaled recreational or medical marijuana. However, there is good research on drug interactions with cannabinoid medications. Dronabinol (Marinol) is a synthetic version of THC that is prescribed in capsule form for poor appetite in patients with AIDS and for nausea and vomiting associated with cancer chemotherapy. Epidiolex is a pharmaceutical grade liquid form of CBD that was recently approved in the US for rare forms of epilepsy. Nabiximols (Sativex) is a whole plant extract of marijuana containing equal parts of THC and CBD. It's not available in the US but is prescribed in some countries as a mouth spray for neuropathic pain from multiple sclerosis and for cancer pain. Nabilone (Cesamet) is a synthetic cannabinoid similar to THC that is prescribed for nausea and vomiting associated with cancer chemotherapy. Developers of these medications have investigated interactions between their drugs and other prescription drugs. What they found is probably also what we could expect for recreational or medicinal marijuana use.

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However, inhaling marijuana through smoking or vaping would be expected to have more rapid effects of somewhat shorter duration.

The information below comes information pages on dronabinol, cannabidiol, and nabiximols from DrugBank. Interactions are described for illustrative purposes only, and are not meant to be a complete list of known interactions. If you are taking prescribed medications while using marijuana, you can go to DrugBank and look up dronabinol (comparable to marijuana containing mostly THC), cannabidiol (comparable to marijuana containing mostly CBD), or nabiximols (comparable to marijuana containing a fairly even mix of THC and CBD). Looking up nabilone may also be informative. On those cannabinoid drug pages, you can scroll down to the Drug Interactions section, where you can search for the medication(s) you take.

Antianxiety Medications

A major family of drugs used to treat anxiety and/or improve sleep is called benzodiazepines. Examples include diazepam (Valium), alprazolam (Xanax), clonazepam (Klonopin), lorazepam (Ativan), triazolam (Halcion), and Zolpidem (Ambien). THC may magnify sedative effects of benzodiazepines, so caution is warranted in using THC with these medications. CBD can decrease metabolism of benzodiazepines, resulting in a build-up of these sedative drugs in the body and an increase in severity of adverse effects. On the other hand, benzodiazepines can decrease metabolism of combined THC and CBD.

Antidepressant Medications

A major family of drugs used to treat depression and anxiety are antidepressants called reuptake inhibitors (SSRIs, SNRIs, SDRIs). Examples include fluoxetine (Prozac), duloxetine (Cymbalta), paroxetine (Paxil), sertraline (Zoloft), citalopram (Celexa), escitalopram (Lexapro), venlafaxine (Effexor), and bupropion (Wellbutrin). Another family of drugs used to treat depression and anxiety are the tricyclic antidepressants. Examples include amitriptyline (Elavil), doxepin (Sinequan), imipramine (Tofranil), and protriptyline (Vivactil). Other drugs commonly used to treat depression and anxiety are mirtazapine (Remeron) and trazodone. THC may magnify sedative effects of antidepressants. CBD may decrease metabolism, increase risk or severity of hypertension, and increase risk or severity of adverse effects when used in combination with antidepressants. Like benzodiazepines, antidepressants can decrease the metabolism of combined THC and CBD.

Antipsychotic Medications

Antipsychotic medication is prescribed for people who have severe mental health conditions that may involve psychosis, like schizophrenia. They are also sometimes prescribed for mania, depression, bipolar disorder, or agitation. Typical (first generation) antipsychotic medications include chlorpromazine (Thorazine), thioridazine (Mellaril), and haloperidol (Haldol). Atypical (second generation) antipsychotic medications include olanzapine (Zyprexa), risperidone (Risperdal), clozapine (Clozaril), aripiprazole (Abilify), lurasidone (Latuda), and quetiapine (Seroquel).

THC may magnify sedative effects of antipsychotics. CBD may decrease metabolism, increase risk or severity of hypertension, and increase risk or severity of adverse effects like rapid heartbeat or drowsiness when used in combination with antipsychotics. Antipsychotics can also decrease the metabolism of combined THC and CBD.

Anticonvulsant and Mood Stabilizing Medications

Anticonvulsant medications are taken to treat seizures or epilepsy and sometimes to stabilize mood. Examples include carbamazepine (Tegretol), levetiracetam (Keppra), lamotrigine (Lamictal), divalproex (Depakote), vigabatrin (Sabril), topiramate (Topamax), phenytoin (Dilantin), and phenobarbital. THC can increase the sedative effects of these medications and CBD can decrease their metabolism and increase the risk or severity of adverse effects, such as rapid heartbeat or drowsiness. The metabolism of combined THC and CBD can be increased by

vigabatrin and phenobarbital and decreased by phenytoin. The combination of lithium and THC and/or CBD increases sedative effects and the risk or severity of adverse effects.

Medications Used to Treat Addictions

People taking medications for addictions are usually advised to avoid marijuana but sometimes use it anyway. It is important to know how marijuana can affect medications used for addiction and vice versa. Medications used to treat opioid use disorder include buprenorphine (Suboxone) and methadone. Either THC or CBD may increase the central nervous system depressant effects of these drugs, increasing the risk or severity of adverse effects. On the other hand, methadone can increase the metabolism of combined THC and CBD. It is unclear whether or how naltrexone (Vivitrol) might interact with marijuana. Medications used to treat alcohol use disorder include acamprosate, naltrexone (Revia) and disulfiram (Antabuse). Like naltrexone, it is unclear whether or how acamprosate might interact with marijuana. THC can decrease the metabolism of disulfiram, and disulfiram can decrease the metabolism of CBD and THC. Medications used to treat nicotine use disorder include bupropion (Zyban) and varenicline (Chantix). The risk or severity of adverse effects can be increased when THC and CBD are combined with bupropion. It is unclear whether or how varenicline might interact with marijuana. The metabolism of THC and/or CBD can be decreased when combined with nicotine.

Pain Medications

Pain medications include opioids like hydrocodone (Vicodin, Norco) and oxycodone (Percoset, OxyContin) and NSAIDs like ibuprofen (Motrin) and naproxen (Naprosyn). Either THC or CBD may increase the central nervous system depressant effects of opioids, increasing the risk or severity of adverse effects. It not known for certain whether THC or CBD interacts with NSAIDs like naproxen or ibuprofen. An interaction has not been demonstrated in humans. However, NSAIDs, THC, and CBD might be expected to interact since they share common metabolic pathways through the liver. It is possible that the serum concentration NSAIDs could be increased when combined with THC. Conversely, it's possible that the metabolism of THC and/or CBD could be decreased by NSAIDs Until more is known, caution is advised during co-use of NSAIDs and THC or CBD.(1) Gabapentin (Neurontin) and pregabalin (Lyrica) are often used to treat nerve pain. Sedative effects and the risk or severity of adverse effects may be increased when THC and/or CBD is combined with gabapentin. Pregabalin can increase the therapeutic efficacy of CBD.

Diabetes Medications

Cannabinoids are known to decrease blood sugar and increase insulin production in people with type 2 diabetes(2), so using marijuana with drugs meant to lower blood sugar can increase the likelihood of hypoglycemia. Marijuana also interacts with a variety of drugs used to treat diabetes in ways that may cause increased levels of diabetes medications in the body. Examples of diabetes medications that may be increased include glyburide (Glynase), glipizide (Glucotrol), repaglinide (Prandin), sitagliptin (Januvia), and canagliflozin (Invokana). Some diabetes drugs, like rosiglitazone (Avandia), pioglitazone (Actos), and canagliflozin (Invokana) can decrease metabolism of THC and/or CBD. It is unclear whether or how metformin (Glucophage) might interact with marijuana.

High Blood Pressure Medications

Hypertension is often treated with ACE inhibitors like lisinopril (Zestril) and benazepril (Lotensin), angiotensin receptor blockers like olmesartan (Benicar) and telmisartan (Micardis), beta blockers like atenolol (Tenormin) and metoprolol (Lopressor), alpha blockers like terazosin, and diuretics like hydrochlorothiazide (Hydrodiuril), and metolazone (Zaroxolyn). CBD can decrease effectiveness of these drugs. CBD can increase risk or severity of adverse effects like rapid heartbeat with certain beta blockers like acebutolol (Sectral) and labetalol (Trandate). CBD can decrease the metabolism of clonidine (Catapres) while other antihypertensive drugs decrease the metabolism of CBD, including enalapril (Vasotec), losartan (Cozaar), carvedilol (Coreg), amlodipine (Norvasc), diltiazem (Cardizem), torsemide (Demadex), and doxazosin (Cardura). THC can decrease the metabolism and

increase serum concentration of hypertension medications, including enalapril, losartan, atenolol, carvedilol, amlodipine, diltiazem, and doxazosin. THC can increase sedative effects of clonidine. Metabolism of THC can be decreased when used with torsemide. Metabolism of combined THC and CBD can be decreased with a number of antihypertensive drugs, including enalapril, losartan, carvedilol, amlodipine, diltiazem, torsemide, and doxazosin.

Cholesterol Medications

High cholesterol is often treated with statins like atorvastatin (Lipitor), rosuvastatin (Crestor), and simvastatin (Zocor). THC and/or can decrease metabolism, decrease excretion, and/or increase serum concentration of these drugs. Conversely, these drugs can decrease metabolism of THC and/or CBD. Fluvastatin (Lescol) can actually increase the metabolism of CBD.

Antacid Medications

Many people take medications to address peptic ulcers and stomach acid problems, including proton pump inhibitors (PPIs) like omeprazole (Prilosec) and lansoprazole (Prevacid) and acid blockers like ranitidine (Zantac) and famotidine (Pepcid). PPIs and acid blockers can decrease the metabolism or excretion rate of CBD and combined THC and CBD.

Blood Thinners

People take blood thinners for a variety of conditions, like atrial fibrillation and a tendency to form blood clots. THC and/or CBD can decrease metabolism and/or increase serum concentration of anticoagulants like warfarin (Coumadin), rivaroxaban (Xarelto), apixaban (Eliquis), and digabatran (Pradaxa). THC can increase the serum concentration of antiplatelet drugs like clopidogrel (Plavix). On the other hand, clopidogrel can decrease metabolism of CBD and combined THC and CBD.

Oral Contraceptives

There is not a lot of research on the interaction between cannabinoids and oral contraceptives, but what we do know creates a complicated picture. According to drugbank.ca, THC and CBD can both affect oral contraceptive metabolism, either decreasing it or increasing it, depending on the medication. Conversely, certain oral contraceptives can increase or decrease THC or CBD metabolism. To complicate matters further, marijuana contains phytoestrogens, which are plant-based chemicals that are chemically similar to human estrogen. There is some evidence that phytoestrogens and cannabinoids in marijuana, particularly CBD, can bind to estrogen receptors in the body. This could potentially decrease the effectiveness of contraceptives. To reduce the possibility of unwanted pregnancy, it would be wise to use a back-up form of birth control.(3)

Other Common Medications

- Levothyroxine is used by people with thyroid conditions. Its metabolism can be decreased by CBD and combined THC and CBD.
- Steroids like prednisone and fluticasone (Flonase) can increase the metabolism of CBD. THC can increase the serum concentration of these drugs.
- Cyclobenzeprine (Flexeril) is an example of a muscle relaxant. CBD and combined CBD and THC decrease the metabolism of cyclobenzaprine while THC increases sedative effects.
- Antibiotics like azithromycin (Zithromax) and antifungals like fluconazole (Diflucan) can decrease the metabolism of CBD and combined THC and CBD.

Summary and Conclusions

Cannabinoids in marijuana, like THC and CBD, can interact in complex ways with a wide variety of medications and increase the likelihood of adverse effects. Marijuana also contains phytoestrogens that may interfere with

medications. THC and CBD interact with each other. Separately, they often have different kinds of interactions with prescribed medications. This is further complicated by the fact that different types and strains of marijuana have different concentrations of THC and CBD. Beyond THC and CBD, there are many other cannabinoids in marijuana about which we know very little. In light of these complexities, interactions between prescribed medications and marijuana can be difficult to predict. If you take prescribed medications and use marijuana, it would be wise to be open with your physician and/or your pharmacist about this. Physicians and pharmacists are in the best position to advise you about potential drug interactions. While "budtenders" in cannabis retail stores are often knowledgeable, they are not health care professionals, and are often unaware of potential interactions between marijuana products and prescription medications.

Useful Resources

DrugBank: https://www.drugbank.ca/

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