

Dr. Mahmoud ElSohly, one of the co-directors of the Marijuana Project at the University of Mississippi (UM), is leading a noteworthy clinical study to evaluate and develop THC eye drops. Instead of smoking cannabis to reduce their intraocular pressure (IOP), glaucoma patients would simply apply the drops. Patients would avoid the elevated feeling often resulting from the use of tetrahydrocannabinol (THC) and still experience its healing properties.

It has been more recently [discovered](#) that there are THC receptors within the eye. The THC eye drops, developed using a modified THC [molecule](#), would be applied directly to the eye, bypassing the lungs, bloodstream, and brain, which are the first parts of the body that receive THC when smoking cannabis.

## What is Glaucoma?

Glaucoma is a group of [diseases](#) that all exhibit increased IOP, caused by an imbalance of fluid within the eye, which can damage the optic nerve and ultimately lead to reduced vision and even blindness. There are often no noticeable symptoms until a patient begins having trouble with their vision. Once damage has occurred, it is irreversible, so it is extremely important to have screenings for glaucoma, particularly for [populations](#) with an increased risk, including people of color, those over the age of sixty, and anyone with a parent or sibling with glaucoma.

Tonometry, or the “air puff” test, is performed during eye exams, which is a quick, painless (although often startling) procedure that allows optometrists and ophthalmologists to get a basic reading of IOP. If there is an abnormal reading, further tests and procedures can be performed to assess the severity of a patient’s glaucoma and determine a treatment plan.

## Typical Treatment for Glaucoma

Treatment for glaucoma uses a multifaceted [approach](#), which may evolve over time if a patient’s condition changes or worsens. Glaucoma patients can make several additional [lifestyle changes](#) to reduce their IOP, including eating a healthy diet, exercising, sleeping with their head in an elevated position, limiting caffeine, and managing their fluid intake. Eye drops are most commonly used, which also reduce IOP. These medications can cause uncomfortable side effects, but it is imperative that patients follow their prescribed regimen and work with their physician to avoid any further ocular damage or vision loss.

Surgery is another possibility, with either a laser procedure or a standard operating room procedure. The type of surgery required depends on the type of glaucoma as well as severity of the patient’s condition. Patients may likely still require glaucoma medication [after](#) having surgery.

## Researchers Have Limited Access to Cannabis

In 1968, the University of Mississippi entered into a [lucrative](#) contract with the federal government to [grow](#) cannabis exclusively for research purposes. Until very [recently](#), researchers within the U.S. have only had access to cannabis from UM to be used for FDA-approved clinical

trials. Unfortunately, the cannabis provided by UM is not of the best quality—samples are sometimes received damaged or unusable and have been deemed to be low in strength compared to what is available from legal dispensaries. Additionally, there have been legal challenges to the original contract. As of 2019, the Drug Enforcement Administration (DEA) stated that it will [review](#) applications submitted by other growers to allow higher quality cannabis to be used for research purposes.

## Other Potential Challenges

In addition to the reduced strength and quality of the cannabis available to researchers, putting this study at a potential [disadvantage](#), making THC eye drops available to patients may be a challenge for other reasons. Similar previous studies did not yield the desired results, and several doctors have denied THC's [efficacy](#) in treating glaucoma.

Furthermore, when extracted from cannabis, THC is in the form of an [oil](#). Eye drops, however, are water-based, and since oil and water do not mix, this separation would not allow for consistent dosing. Additionally, having an oily substance in their eyes would not be a comfortable experience for patients.

## Why THC Eye Drops in Development Could be a Better Option

Other [trials](#) have studied THC eye drops, but the new study is different as it uses a modified THC [molecule](#). In addition to reducing IOP, THC is neuroprotective, which is an added benefit for glaucoma patients, as the optic nerve can become damaged as part of the disease process. It is unclear whether there would be any potential for reversal, but it is, unfortunately, unlikely.

Other novel treatments have been [tested](#) but have not yielded their expected results. There has been a reduction in research of cannabis-based glaucoma treatments in part because [pharmaceuticals](#) used to treat the condition have improved, have longer lasting effects, and their results have surpassed those previously received from cannabis.

If the delivery system of the new THC eye drops is appropriately formulated, it could not only benefit current glaucoma patients but also pave the way to additional research using modified THC molecules to develop treatments for other conditions. [Studies](#) of this nature have already occurred.

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