MEDICAL USE OF CANNABIS FOR GLAUCOMA

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Summary
The clinical utility of cannabis (sometimes referred to as marijuana or marihuana) for the treatment of glaucoma is limited by the inability to separate the potential clinical action from the undesirable neuropsychological and behavioural effects. The Canadian Ophthalmological Society does not support the medical use of cannabis for the treatment of glaucoma due to the short duration of action, the incidence of undesirable psychotropic and other systemic side effects and the absence of scientific evidence showing a beneficial effect on the course of the disease. This is in contrast to other more effective and less harmful medical, laser and surgical modalities for the treatment of glaucoma.

Full policy statement
The plant *Cannabis sativa* has long been recognized to have medicinal properties.[1] Over 400 compounds have been isolated but the two most active, Δ 9-tetrahydrocannabidiol (THC) and cannabidiol (CBD) have unique actions and potential therapeutic applications.[2] THC, first isolated in 1964,[3] is responsible for the well known psychotropic effects when the dried plant or resin is smoked or ingested orally. THC is also responsible for appetite stimulation and control of nausea and vomiting. CBD may lessen muscle spasms and chronic pain.

In addition to its psychotropic effects, smoked THC was first noted to lower intraocular pressure (IOP) in 1971.[4] Since then, other studies have confirmed the IOP lowering effect of THC by various modes of administration including inhalational,[4,5] oral,[6] intravenous,[7] sublingual,[8] and topical.[9] Although topical application might seem to be an optimal route of administration, ocular penetration has been poor due to the high lipophilicity and low aqueous solubility of the cannabinoid extracts. Topical preparations have also been noted to cause local irritation and corneal injury. In addition, some studies have failed to find a hypotensive effect of topical THC.[10,11] The oral route has also been limited by variable absorption.[6] The mechanism of IOP reduction is not well understood.[12-14] The maximum hypotensive effect occurs between 60-90 minutes and the duration of action of is brief at only 3-4 hours.[4,15]

The main problems with inhaling the smoke of burning cannabis leaves and resin are the side effects which acutely include psychotropic effects (euphoria, dysphoria, decreased short-term memory, cognitive impairment, time distortion, decreased co-ordination, sleepiness),[4,5] tachycardia, palpitations, systemic hypotension[8] and conjunctival hyperaemia. The long-term effects of smoking cannabis include emphysema and possible lung cancer.[16] There are also concerns about the potential addictive properties and the development of tolerance.[17] The clinical utility of cannabis for the treatment of glaucoma is limited by the inability to separate the potential clinical action from the undesirable neuropsychological and behavioural effects.

The legalization of cannabis for recreational use in Canada, as well as its government regulated production, sale and distribution, may have other impacts. In jurisdictions where laws have relaxed restrictions on access, some societal costs have been noted to increase. Motor vehicle accidents attributable to the use of cannabis rose by a factor of 2 following legalization in Colorado[18] and emergency room visits for injuries[19], psychiatric and other medical issues have been noted to be higher in users, as opposed to non-users, of cannabis.[20]

The Canadian Ophthalmological Society does not support the medical use of cannabis for the treatment of glaucoma due to the short duration of action, the incidence of undesirable psychotropic and other systemic side effects and the absence of scientific evidence showing a beneficial effect on the course of the disease. This is in contrast to other more effective and less harmful medical, laser and surgical modalities for the treatment of glaucoma.

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