ARIZONA SUPREME COURT

STATE OF ARIZONA, *Plaintiff-Appellee*, *vs.* RODNEY CHRISTOPHER JONES, *Defendant-Appellant.*	Supreme Court No. CR-18-0370-PR Court of Appeals Division One No. 1 CA-CR 16-0703 Yavapai County Superior Court No. P1300CR201400328

PETITION FOR REVIEW

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Rodney Jones ("Rodney"), a registered qualifying patient ("patient" or "cardholder") with immunity under the Arizona Medical Marijuana Act for his medical use of "marijuana,"[1] petitions this Court to review the Court of Appeals' Opinion, filed June 26, 2018 (the "Opinion").

INTRODUCTION

In 2010, Arizona voters declared that state law would distinguish between "the medical and non-medical uses of marijuana."[2] With adoption of AMMA, they "established as public policy" that patients suffering from certain medical conditions would not face state criminal prosecution for treating them with the medicines of the cannabis plant.[3] Cannabinoids are stored in the plant's resin.[4]

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[1] A.R.S. §§ 36-2801, *et seq.*("AMMA" or the "Act"). AMMA defines "marijuana" as "all parts of any plant of the genus cannabis whether growing or not, and the seeds of such plant." *Id.* § -2801(8).

[2] Proposition 203 § 2(G)(2010) [APPX030]; *see also* § 2(A)-(C) [APPX030].

[3] *State ex rel. Polk v. Hancock*, 237 Ariz. 125, 129 ¶ 9 (2015).

[4] Cannabinoids are the biologically-active, chemical constituents of the cannabis plant. *See* Merriam-Webster.com, "cannabinoid," https://www.merriam-webster.com/dictionary/cannabinoid (visited August 24, 2018). The overwhelming majority are synthesized and stored in the resin of the medical-grade cannabis plant's glandular trichomes, particularly the capitate-stalked resin glands. Michael Backes, *Cannabis Pharmacy, The Practical Guide to Medical Marijuana* (Hachette Book Group 2017) at 21, 311-12, 314; George F. Van Patton, *The Cannabis Encyclopedia* (Van Patten Publishing U.S.A. 2015) at 44-45, 88, 94-95; Ernest Small, *Cannabis, A Complete Guide* (Taylor & Francis Group 2017) at 199-203. [APPX031-052.] These trichomes emerge from and cover the plant's tear-shaped "inflorescences" (floral clusters including bracts, nearby leaves, and immediate stems), commonly referred

. . . (footnote continued on next page)

Rodney, a 26-year-old resident of Yavapai County with severe spinal pain, is one of about 174,000 active cardholders who benefit from treatment with cannabinoids. At a licensed dispensary in Maricopa County in 2013, he acquired 5/100ths of an ounce (1.43 grams) of hash—*i.e.*, resin extracted from the cannabis plant. [APPX036.] When he returned to Yavapai County, he was arrested with his registry identification card in hand, indicted, convicted, and sentenced to two-and-one-half years in prison on narcotics and drug paraphernalia (a glass jar) charges.

Over a strong dissent, the Court of Appeals pronounced the cannabis plant's resin—the reservoir of its medicines—ceases to be "immunized marijuana" under AMMA when extracted from the plant, Op. ¶¶9-11, and *affirmed* Rodney's conviction. Op. ¶15. Despite that AMMA defines marijuana to include "all parts" of the plant, the majority supplanted that definition with older definitions from criminal law. Op. ¶14. The majority effectively amended AMMA's definition of marijuana to exclude resin extract, thus restricting the *form* of marijuana a patient may use. Such a restriction appears nowhere in AMMA's text and frustrates the

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to simply as the "buds" or the "flowers," in the final stage of its lifecycle. *Id.* The word "flower" is commonly understood to mean, *inter alia*, "a cluster of small flowers growing closely together that resembles and is often viewed as a single flower: inflorescence." *See* Merriam-Webster.com., "flower," https://www.merriam-webster.com/dictionary/flower (visited August 11, 2018).

intent of the Act.

The decision also ignores the violation of Rodney's right to due process of law and paves the way for more. Dispensaries prepare, label, and report their sales of extract and extract-infused edible and non-edible products to serve patients for whom *smoking* or *eating* the plant's dried flowers is impossible, ill-suited, or undesirable.[5] They have done so under the Department of Health Service's supervision and rules for years. *See infra* n.13. As such, Rodney lacked fair notice that he could be penalized for acquiring a thimble's worth of extract from a dispensary. Rather, as a dispensary's conduct carries the imprimatur of the state, Rodney (and the rest of Arizona's patients) had every reason to believe acquiring extract or extract preparations was lawful.[6]

Rodney also had a right to expect fairness in a criminal proceeding. But the

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[5] Examples include children; lung cancer or Crohn's disease patients; patients with food allergies, patients requiring greater concentrations and/or more precise dosing of the plant's medicines, pregnant patients and other patients seeking to avoid inhaling the plant's carcinogens. *See also* Declaration of William Troutt, NMD, dated November 7, 2013, ¶¶ 11-13. [APPX065-069 (as submitted in *Welton v. State*, No. CV2013–014852 (Ariz.Super.Ct.).].

[6] After the Maricopa County superior court's March 21, 2014 decision in *Welton* that AMMA's grant of immunity applies to the medical use of extract preparations [APPX070-075], which was not appealed, Maricopa County law enforcement refrained from pursuing patients who use those products, and DHS promulgated more guidance reflecting its view that AMMA permits dispensing such products.

state *withheld* from the grand jury that he was a patient, that he presented his AMMA card to police, and that he advised them he acquired the extract at a dispensary. The state also failed to instruct the grand jury regarding AMMA's definition of "marijuana," its patient-immunity provision, or even of its existence. Having been presented only with the thin slice of facts and law that the state deemed favorable (*i.e.*, provisions of Title 13 and carefully-elicited testimony from the officer), the grand jury served up the proverbial "ham sandwich" the state had ordered. By design, the proceeding against Rodney was a sham.

Finally, the Opinion stands in tension with *State v. Kemmish*, 244 Ariz. 314 (App. 2018), where Division One upheld the dismissal of a narcotics charge against a visitor from California for possession of an extract-preparation because his physician's recommendation letter was found to be the equivalent of a card.

In sum, the Opinion reaches the wrong conclusion on a consequential and recurring question of state law that this Court has not previously addressed, tolerates a violation of due process and promises more, and is inconsistent with *Kemmish*. It thus perpetuates a miscarriage of justice, injects uncertainty into Arizona law and fear and confusion into Arizona's patient population, and forces those patients to decide between facing prosecution for administering the forms of medical marijuana

they need or sacrificing medical treatment.[7] That is what AMMA was enacted to stop.

[7] After the Opinion, DHS asserted it cannot approve applications to add diseases to AMMA's list of debilitating medical conditions if those conditions call for treatment with extract preparations. [APPX061-064.] Rodney understands that law enforcement has also begun to target other patients.

ISSUES PRESENTED FOR REVIEW

1. AMMA immunizes patients from prosecution for their AMMA-compliant use of "marijuana," broadly defined in the Act as "all parts" of the plant without exception. Resin is one of the cannabis plant's parts, regardless of extraction. Did Rodney commit felonies by acquiring 5/100ths of an ounce of resin from a dispensary and placing it in a jar?

2. Dispensaries have manufactured, labeled, dispensed, and reported their sales of extracts and extract-preparations to the state under DHS supervision and pursuant to its rules and guidance for years. Rodney acquired the extract at a dispensary in Maricopa County. Did the state afford Rodney fair notice that such conduct could subject him to prosecution in Yavapai County?

3. The state withheld from the grand jury that Rodney was a cardholder, presented his card to police, and informed police that he acquired the extract at a dispensary, as well as instructions on AMMA's definition of marijuana, patient-immunity provision, or even of its existence. Was this misconduct prejudicial, fundamental error?

FACTS AND PROCEDURAL HISTORY

DHS issued a card to Rodney in June 2012 so that he could lawfully treat his condition with the cannabis plant's medicines. [IR-84 at 21]. He later acquired a sample of extract weighing 5/100ths of an ounce at a dispensary in Maricopa County. [IR-84 at 14]. On March 1, 2013, police in Yavapai County found a jar containing the sample in his backpack when responding to a noise complaint. [IR-84 at 20]. They arrested him despite presentation of his card. [IR-84 at 20]. The Arizona Department of Public Safety ("DPS") reported the substance was "cannabis" weighing "1.43 grams, a useable quantity." [IR-84 at 9].

On April 9, 2014, a grand jury returned an indictment charging Rodney with possession or use of a narcotic drug under A.R.S. § 13-3408, and possession or use of drug paraphernalia under A.R.S. § 13-3415. [IR-1]. The grand jury was not informed of the evidence or law regarding Rodney's legal immunity. [APPX076.][8]

Rodney moved to dismiss, contending that AMMA precluded his prosecution because it immunized his conduct, the decision in *Welton* and DHS's guidance and rules regarding extract supported his motion, and he was not afforded fair notice that

[8] The grand jury transcript, which has been filed under seal, appears to be missing page-4. Petitioner is seeking a copy of that page and will supplement accordingly.

his conduct could result in felony charges in Yavapai County. [IR-27, 34, 41 and 58] The trial judge denied the motion holding that "[DHS]'s … rules … may provide a due process violation but not a basis" for dismissal [IR-50] As to AMMA, she "accept[ed] the State's position that it was not specifically written in a way that addresses th[e] [extract] issue." [IR-50.][9]

Rodney waived trial by jury and filed a bench memorandum citing AMMA and constitutional provisions, his valid card at time of arrest, his acquisition of the extract at a dispensary, and DPS's report. [IR-84, 85.].The court reviewed his memorandum and pronounced him guilty. [IR-86, 106 at 12:4–13:14.]

Despite expressing uncertainty about the guilty verdict, the court sentenced Rodney to (1) concurrent presumptive prison terms on the narcotics and paraphernalia charges of two-and-one-half years and one year, respectively, with credit for 366 days served, (2) 30 months of supervised probation, and (3) criminal fines, surcharges, and assessments. [IR-90, 108 at 8:5-10:24.][10] Rodney filed a timely

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[9] At the trial court's suggestion, [IR-58 at 21], Rodney sought special action relief, which was declined by Division One. [IR- 59.] This Court denied his special action petition for review. [IR-73.]

[10] As the judge explained, "Again, Mr. Jones, … I don't know what the answer is in terms of narcotic drug Cannabis versus marijuana. I know … that may end up being set aside."[IR-108 at 11:19-23.]

notice of appeal. [IR-96]. After briefing and oral argument, the divided panel released the Opinion.

REASONS REVIEW SHOULD BE GRANTED

A. As the majority's ruling supplants AMMA's definition of "marijuana" with one that undermines voter intent, this Court should accept review to resolve this important and recurring question of law.

The "primary objective in construing statutes adopted by initiative is to give effect to the intent of the electorate." *Dobson v. McClennen*, 238 Ariz. 389, 391 ¶7 (2015) (quotation and citation omitted); *see also* A.R.S. § 1-211(B). "[T]he best and most reliable index" of voter intent "is [the statute's] language and, when the language is clear and unequivocal, it is determinative of the statute's construction." *State ex rel. Montgomery v. Harris*, 234 Ariz. 343, 344 ¶8 (2014) (quotation and citation omitted). The intent in adopting AMMA was that patients using medical marijuana "would not be penalized for such use" if they comply with AMMA's weight requirement and refrain from the specified non-immunized activities. *State v. Maestas*, 244 Ariz. 9, 12 ¶ 9 (2018) (quotation and citation omitted).

AMMA carefully defined "marijuana" more expansively than Title 13, which excludes the plant's extracted resin from its definition, labels that resin "cannabis,"

and classifies it as a narcotic.[11] Under AMMA, "all parts of any plant of the genus cannabis whether growing or not, and the seeds of such plant[,]" are "marijuana."[12] Statutes seldom contain text as clear or broad as that. Its plain meaning is that *any* part of the cannabis plant is "marijuana." The extracted resin of a trichome is no less "part" of the cannabis plant than the juice of an orange is part of the tree. Accordingly, it is "marijuana" when used in compliance with AMMA. This stands to reason: the cannabinoids are in the resin. [13]

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[11] A.R.S. §§ 13-3401(4) and (19). When the Arizona legislature removed the undefined term "marijuana" from Title 13's definition of "cannabis" in 1981, it preserved the language "the resin extracted from any part of a plant of the genus cannabis" in the definition of "cannabis." 1981 Arizona Session Laws, Ch. 264, §§ 6, 8 [APPX053-060]. Accordingly, the legislature had to *exclude* the same part of the plant from the new definition of "marijuana" in Title 13. It chose the words "from which the resin has not been extracted." *Id.* at §8 [APPX056].

[12] A.R.S. § 36-2801(8). AMMA authorizes dispensaries to "manufacture" the plant or any of its parts. *See* A.R.S. § 13-3401(17) (defining "manufacture"), A.R.S. § 36-2801(15) (explaining how "any mixture or preparation" is weighed to comply with "allowable amount" caps in A.R.S. §§ 36-2801(1)(a) and -2801(1)(c)).

[13] DHS's rules and guidance corroborate this interpretation of AMMA's provisions and comprise persuasive authority. Op. ¶23. The examples cited there, such A.A.C. R9-17-304(C)(8)(b)(v)-(vi), which requires dispensary applicants to specify in their bylaws whether they plan to "[p]repare, sell, or dispense *marijuana-infused non-edible products*" (in addition to infused-edibles) and the Medical Marijuana Verification System Dispensary Handbook ("Handbook"), which instructs that non-edible items include "*any non-edible items, such as concentrates*, sold that contain medical marijuana," that these items must be *labeled with the amount of marijuana* they contain and *entered into the verification system*, and that a dispensary may sell these products as long as a patient does not exceed his "allowable amount of marijuana" within a fourteen day period, *see* Handbook at 11

. . . (footnote continued on next page)

The carefully-chosen wording of AMMA's definition of "marijuana" reflects the intent to allow patients to obtain treatment with extract and extract-preparations. While Title 13 defines "marijuana" as "all parts of any plant of the genus cannabis, *from which the resin has not been extracted*, whether growing or not, and the seeds of such plant[,]" A.R.S. § 13-3401(19), AMMA excised only the italicized sequence of words from Title 13's definition and adopted the rest of the sentence *verbatim*. *See supra* n.11. As AMMA's voters adopted a different, unambiguous definition of "marijuana," it must be "assum[ed] that the [electorate] has said what it means." *Cundiff v. State Farm Mut. Auto. Ins. Co.*, 217 Ariz. 358, 360, ¶ 8 (2008); *cf. Brousseau v. Fitzgerald*, 138 Ariz. 453, 455 (1984) ("When the Legislature changes the language

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https://www.azdhs.gov/documents/licensing/medical-marijuana/dispensaries/dispensary-handbook.pdf, are just a few of the several rules that dispensaries and the public have relied upon for years. DHS publishes its own Recommendations for Best Practices Regarding Marijuana Extractions, Concentrates, Infusion Kitchens and Edible Products Containing Marijuana ("Recommendations"), which addresses safety standards for handling extracts that are infused into edible items, *see* Recommendations at 1 https://azdhs.gov/documents/licensing/medical-marijuana/dispensaries/infusion-kitchens-guidance-refrigeration.pdf (last visited 9/10/18), and DHS defines edible items broadly to include "Marijuana tinctures, tonics, tablets, capsules, etc." *See* Food. https://www.azdhs.gov/documents/licensing/medical-marijuana/dispensaries/food.pdf (last visited 9/10/18). Even DHS's website advises the public that dispensaries may "prepare, sell, or dispense marijuana-infused non-edible products" as well as infused-edible products. *See* DHS Q&A https://www.azdhs.gov/licensing/medical-marijuana/index.php#faqs-dispensary ("What services must [or may] a dispensary provide?") (last visited 9/10/18).

of a statute, the presumption is that they intended to make a change in existing law.").

AMMA's immunity provisions further demonstrate the intent to eliminate Title 13's distinction between "marijuana" and "cannabis" for purposes of medical use. A.R.S. §§ 36-2811(E) and (F) authorize dispensaries and their agents to "manufacture" the plant or any of its parts, and to "sell" or "dispense" it. A.R.S. §§ 36-2811(E), (F); *see also* A.R.S. § 36-2806(D)("A … dispensary is prohibited from … manufacturing . . . marijuana for any purpose except to assist … patients with the medical use of marijuana ...."); *accord* A.A.C. R9-17-317(A)(5)(2017)("A dispensary shall ensure that medical marijuana. . . is labeled with . . . [t]he date of manufacture, harvest, or sale[.]"), A.A.C. R9-17-306(C) (2017)("A dispensary … shall not … manufacture … medical marijuana at a new location until the dispensary submits an application ...."); *see also* A.R.S. § 13-3401(17)("manufacture" means "prepar[ing] … [and] mix[ing]"). As Title 13 proscribes the "manufacture" of "cannabis" but not "marijuana," *compare* A.R.S. §§ 13-3408 and 13-3405, voters would not have immunized the "manufacture" of "marijuana" if their intent was to adopt Title 13's narrower definition.

The voters' intent to maximize patient-access to the plant's medicines is also evidenced by AMMA's definitions of "allowable amount" and "useable

marijuana." These provisions require that, in calculating the weight of the "marijuana" a patient possesses against the "allowable amount," as defined in A.R.S. § 36-2801(1)(a)(1), parts of the plant "incidental to medical use" (because low in cannabinoids) are *excluded*. A.R.S. §§ 36-2801(1)(c), 36-2801(15) (*non*-"useable marijuana" is the plant's "seeds, stalks, and roots"). Only the parts that are not incidental but instead "useable" for treating medical conditions are weighed. AMMA identifies those as the "dried flowers," the several parts of which include the resin-filled trichomes with the highest concentration of medicines. *Id*. Likewise, AMMA requires that "any mixture or preparation" of those useable parts be weighed as well, confirming the absence of any restriction as to the form of medical marijuana a patient may use and an intent to maximize access to the plant's medicines by excluding non-medicinal ingredients from the calculation when weighing edibles. *Id*.

Furthermore, had voters intended to exclude from immunity the medical use of the plant's extracted resin, despite AMMA's carefully-crafted definition of "marijuana," they would have stated it explicitly in AMMA's non-immunized activities provision. A.R.S. § 36-2802.

Having broadly defined "marijuana" to include extract, AMMA's drafters used the term extensively throughout the Act. Even the definition of "medical use"

invokes the term "marijuana" without limitation. A.R.S. § 36-2801(9). As relevant here, no patient "is … subject to arrest, prosecution or penalty in any manner … [f]or … medical use of *marijuana*[,]" A.R.S. § 36-2811(B)(emphasis added), subject to "narrow exceptions" that do not prohibit use of extract, but instead contemplate it. *Reed-Kaliher v. Hoggatt*, 237 Ariz. 119, 122 ¶¶ 7-8 (2015).

These provisions are clear. For AMMA-compliant medical use, extracted resin is "marijuana" and Rodney was authorized to have it. This is the only interpretation of AMMA that gives effect to the voters' intent as expressed through its unambiguous text. It also permits a sensible reconciliation of AMMA and Title 13. Title 13 broadly prohibits the *non-medical* use of "marijuana" and "cannabis," as defined therein. AMMA permits the *medical use* of both by Arizona's cardholders provided they comply with the cap and the non-immunized activities provision.

The plain meaning of AMMA's text and the voters' intent must be given effect. Supplanting AMMA's broad definition of "marijuana" with so-called "existing understanding[s]" from "pre-existing [criminal] law" is repugnant to those goals. Op. ¶9. A reviewing court may not adopt judicially- or legislatively-defined meanings of terms from other statutes when the statute under review defines the relevant term clearly and consistent with the voters' intent, or when importing a definition would frustrate a statute's object. *E.g.*, *Bell. v. Indus., Comm'n*, 236 Ariz.

478, 483 ¶28 (2015).

Nor was the majority free to supplant AMMA's definition of "marijuana" with "useable marijuana," which the Opinion suggests might have led to the majority's adoption of the criminal law's definitions. Op. ¶¶6,12. Read in tandem with A.R.S. § 36-2801(1)(c), the voters' intent in defining "useable marijuana" as they did was only to distinguish between the parts of the plant to be weighed against AMMA's "allowable amount" cap. Far from limiting the form of "marijuana" a patient may use, the provision maximizes the amount of "marijuana" a patient may possess (while staying within the 2.5 oz. limit) by weighing only the medicinally-useable parts (and "mixtures or preparations" thereof) and only after the flowers have been dried to eliminate water weight.

As for the majority's concern about drug potency, the types and concentrations of cannabinoids that any plant may have varies and increased potency in no way precludes appropriate medical use of extract. [APPX031-052.] As with all medicines, potency bears on dosage and administration, and therefore is left to doctors and patients. For this reason, voters determined not to impose potency restrictions even for the "green leafy substance" the majority associates (despite the Act's much broader definition) with the word "marijuana." Op. ¶6. Like form,

potency has no bearing on whether a substance falls within AMMA's definition of "marijuana."

B. The Court should accept review to address whether prosecuting without fair notice of prohibited conduct violates the due process rights of Rodney and thousands of similarly-exposed cardholders.

The sequence of events leading to Rodney's incarceration for possessing a small sample of extract that he acquired at a dispensary offends due process. A criminal statute must "define the criminal offense with sufficient definiteness that ordinary people can understand what conduct is prohibited and in a manner that does not encourage arbitrary and discriminatory enforcement." *Kolender v. Lawson*, 461 U.S. 352, 357 (1983). "Due process requires that the statutory language convey a sufficiently definite warning as to proscribed conduct when measured by common understanding and practices." *State v. Boyd*, 201 Ariz. 27, 29 ¶13 (App. 2001) (quotation and citation omitted).

Title 13 must be read in combination with AMMA. Patients like Rodney have been purchasing extract from dispensaries, with both parties reasonably believing that it is lawful, for years. Interpreting Title 13 to render the possession of extract unlawful even when possessed by a cardholder in compliance with AMMA would lead to widespread confusion by both patients and dispensaries. No ordinary patient could reasonably expect a state-regulated dispensary would dispense a labeled and

reported product that is unlawful to possess even with a DHS-issued card. Such a result is illogical and could not have been contemplated by AMMA's drafters or voters. *See State v. Kerr*, 142 Ariz. 426, 433 (App. 1984) ("[C]ourts will avoid an interpretation that leads to an absurdity because an absurdity could not have been contemplated by the legislature.").[14]

"[D]enial of due process 'as applied to a criminal trial is the failure to observe that fundamental fairness essential to the very concept of justice.'" *State v. Maldonado*, 92 Ariz. 70, 76 (1962). Rodney's conviction offends basic conceptions of fundamental fairness.[15] The trial court's ruling must be reversed. *See Kolender*, 461 U.S. at 357.

C. This Court should accept review to resolve whether withholding all facts and law germane to Rodney's AMMA immunity from the grand jury was prejudicial, fundamental error.

The state's withholding of all facts and law germane to Rodney's AMMA immunity defense from the grand jury was "error going to the foundation of the case, error that takes from the defendant a right essential to his defense, and error of such magnitude that the defendant could not possibly have received a fair trial." *See State*

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[14]. The trial court even acknowledged DHS's "rules … may … provide a due process violation," but still convicted Rodney. [IR-50.]

[15] Even if the statutory definitions were ambiguous, the rule of lenity requires resolution of that ambiguity in favor of Rodney. *Shadid v. State*, 244 Ariz. 450, 452 n.3 (App. 2018).

v. Henderson, 210 Ariz. 561, 567 ¶19 (2005) (quotation omitted). That fundamental error prejudiced Rodney, as he lost his statutory immunity from prosecution.

Reversal is warranted where a prosecutor's actions rise to the level of misconduct.[16] *State v. Bocharski*, 218 Ariz. 476, 492 ¶74 (2008) ("prosecutor intentionally engaged in improper conduct and did so with indifference, if not a specific intent, to prejudice the defendant"). Here, the prosecutor's conduct demonstrated at least indifference to Rodney's right to a fair trial, if not an intent to suppress relevant facts and law that did not comport with the state's theories.

"The prosecutor has an obligation to seek justice, not merely a conviction, and must refrain from using improper methods to obtain a conviction." *State v. Hughes*, 193 Ariz. 72, 80 ¶33 (1998). Here, the prosecutor prioritized a conviction over justice, and Rodney was denied a fair trial. The conviction should be reversed and the indictment dismissed.

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[16] As this issue was not raised through a motion to remand pursuant to Arizona Rule of Criminal Procedure 12.9, it is now subject to fundamental error review. *E.g.*, *State v. Peltz*, 242 Ariz. 23, 27 ¶7 (App. 2017).

CONCLUSION

For all the foregoing reasons, review should be granted.

RESPECTFULLY SUBMITTED this 10th day of September, 2018.

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NOTICE OF ELECTRONIC FILING

The foregoing PETITION FOR REVIEW was electronically filed this 10th day of September, 2018 using the AZ Turbo Court electronic filing system and was served as indicated in the separate Certificate of Service electronically filed this same date.

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APPENDIX

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PROPOSITION 203

OFFICIAL TITLE

AN INITIATIVE MEASURE

AMENDING TITLE 36, ARIZONA REVISED STATUTES, BY ADDING CHAPTER 28.1; AMENDING SECTION 43-1201, ARIZONA REVISED STATUTES; RELATING TO THE MEDICAL USE OF MARIJUANA; PROVIDING FOR CONDITIONAL REPEAL.

TEXT OF PROPOSED AMENDMENT

Be it enacted by the people of the state of Arizona:

Section 1. Title.

This act may be cited as the "Arizona Medical Marijuana Act."

Sec. 2. Findings.

The People of the State of Arizona find and declare the following:

A. Marijuana's recorded use as a medicine goes back nearly 5,000 years, and modern medical research has confirmed beneficial uses for marijuana in treating or alleviating the pain, nausea and other symptoms associated with a variety of debilitating medical conditions, including cancer, multiple sclerosis and HIV/AIDS, as found by the National Academy of Sciences' Institute of Medicine in March 1999.

B. Studies published since the 1999 Institute of Medicine report have continued to show the therapeutic value of marijuana in treating a wide array of debilitating medical conditions. These include relief of neuropathic pain caused by multiple sclerosis, HIV/AIDS and other illnesses that often fail to respond to conventional treatments and relief of nausea, vomiting and other side effects of drugs used to treat HIV/AIDS and hepatitis C, increasing the chances of patients continuing on life-saving treatment regimens.

C. Marijuana has many currently accepted medical uses in the United States, having been recommended by thousands of licensed physicians to at least 260,000 patients in the states with medical marijuana laws. Marijuana's medical utility has been recognized by a wide range of medical and public health organizations, including the American Academy of HIV Medicine, American College of Physicians, American Nurses Association, American Public Health Association, Leukemia & Lymphoma Society and many others.

D. Data from the Federal Bureau of Investigation's Uniform Crime Reports and the Compendium of Federal Justice Statistics show that approximately 99 out of every 100 marijuana arrests in the U.S. are made under state law, rather than under federal law. Consequently, changing state law will have the practical effect of protecting from arrest the vast majority of seriously ill patients who have a medical need to use marijuana.

E. Alaska, California, Colorado, Hawaii, Maine, Michigan, Montana, Nevada, New Mexico, Oregon, Vermont, Rhode Island and Washington have removed state-level criminal penalties for the medical use and cultivation of marijuana. Arizona joins in this effort for the health and welfare of its citizens.

F. States are not required to enforce federal law or prosecute people for engaging in activities prohibited by federal law. Therefore, compliance with this act does not put the state of Arizona in violation of federal law.

G. State law should make a distinction between the medical and nonmedical uses of marijuana. Hence, the purpose of this act is to protect patients with debilitating medical conditions, as well as their physicians and providers, from arrest and prosecution, criminal and other penalties and property forfeiture if such patients engage in the medical use of marijuana.

Sec. 3. Title 36, Arizona Revised Statutes, is amended by adding Chapter 28.1 to read:

CHAPTER 28.1

ARIZONA MEDICAL MARIJUANA ACT

36-2801. Definitions

IN THIS CHAPTER, UNLESS THE CONTEXT OTHERWISE REQUIRES:

1. "ALLOWABLE AMOUNT OF MARIJUANA"

(a) WITH RESPECT TO A QUALIFYING PATIENT, THE "ALLOWABLE AMOUNT OF MARIJUANA" MEANS:

(i) TWO-AND-ONE-HALF OUNCES OF USABLE MARIJUANA; AND

(ii) IF THE QUALIFYING PATIENT'S REGISTRY IDENTIFICATION CARD STATES THAT THE QUALIFYING PATIENT IS AUTHORIZED TO CULTIVATE MARIJUANA, TWELVE MARIJUANA PLANTS CONTAINED IN AN ENCLOSED, LOCKED FACILITY EXCEPT THAT THE PLANTS ARE NOT REQUIRED TO BE IN AN ENCLOSED, LOCKED FACILITY IF THE PLANTS ARE BEING TRANSPORTED BECAUSE THE QUALIFYING PATIENT IS MOVING.

(b) WITH RESPECT TO A DESIGNATED CAREGIVER, THE "ALLOWABLE AMOUNT OF MARIJUANA" FOR EACH PATIENT ASSISTED BY THE DESIGNATED CAREGIVER UNDER THIS CHAPTER MEANS:

(i) TWO-AND-ONE-HALF OUNCES OF USABLE MARIJUANA; AND

(ii) IF THE DESIGNATED CAREGIVER'S REGISTRY IDENTIFICATION CARD PROVIDES THAT THE DESIGNATED CAREGIVER IS AUTHORIZED TO CULTIVATE MARIJUANA, TWELVE MARIJUANA PLANTS CONTAINED IN AN ENCLOSED, LOCKED FACILITY EXCEPT THAT THE PLANTS ARE NOT REQUIRED TO BE IN AN ENCLOSED, LOCKED FACILITY IF THE PLANTS ARE BEING TRANSPORTED BECAUSE THE DESIGNATED CAREGIVER IS MOVING.

(c) MARIJUANA THAT IS INCIDENTAL TO MEDICAL USE, BUT IS NOT USABLE MARIJUANA AS DEFINED IN THIS CHAPTER, SHALL NOT BE COUNTED TOWARD A QUALIFYING PATIENT'S OR DESIGNATED CAREGIVER'S ALLOWABLE AMOUNT OF MARIJUANA.

2. "CARDHOLDER" MEANS A QUALIFYING PATIENT, A DESIGNATED CAREGIVER OR A NONPROFIT MEDICAL MARIJUANA DISPENSARY AGENT WHO HAS BEEN ISSUED AND POSSESSES A VALID REGISTRY IDENTIFICATION CARD.

3. "DEBILITATING MEDICAL CONDITION" MEANS ONE OR MORE OF THE FOLLOWING:

(a) CANCER, GLAUCOMA, POSITIVE STATUS FOR HUMAN IMMUNODEFICIENCY VIRUS, ACQUIRED IMMUNE DEFICIENCY SYNDROME, HEPATITIS C, AMYOTROPHIC LATERAL SCLEROSIS, CROHN'S DISEASE, AGITATION OF ALZHEIMER'S DISEASE OR THE TREATMENT OF THESE CONDITIONS.

(b) A CHRONIC OR DEBILITATING DISEASE OR MEDICAL CONDITION OR ITS TREATMENT THAT PRODUCES ONE OR MORE OF THE FOLLOWING: CACHEXIA OR WASTING SYNDROME; SEVERE AND CHRONIC PAIN; SEVERE NAUSEA; SEIZURES, INCLUDING THOSE CHARACTERISTIC OF EPILEPSY; OR SEVERE AND PERSISTENT MUSCLE SPASMS, INCLUDING THOSE CHARACTERISTIC OF MULTIPLE SCLEROSIS.

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CANNABIS PHARMACY

REVISED AND UPDATED

THE PRACTICAL GUIDE TO MEDICAL MARIJUANA

MICHAEL BACKES Foreword by ANDREW WEIL, M.D.

JACK D. McCUE, M.D., MEDICAL EDITOR

APPX031

Cannabis Pharmacy

The Practical Guide to Medical Marijuana

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CONTENTS

Medicine in the Resin

Like many medicinal plants and herbs, the cannabis plant produces specialized hairs called trichomes that secrete resinous oils. Trichomes evolved primarily for protection, seed dispersal, and, occasionally, to assist in the plant's development.[45] The female cannabis plant produces a profusion of resin-producing capitate-stalked glandular trichomes in its aerial flowering tops. The tips of these trichomes secrete terpenoids, fats, and cannabinoids.[46] The unpollinated female cannabis plant produces far greater concentrations of medicinal compounds in its resin (up to 20×) than a male or fertilized female plant. Each tiny cannabis flower within these clusters consists of a single, curled leaf known as a bract. Each cannabis bract is covered with vast numbers of tiny trichomes. Under magnification, a trichome resembles a golf ball sitting atop a tee. The golf ball is the trichome's resin head, a microscopic cuticle wax balloon filled with oils secreted from secretory cells at the tip of the trichome's stalk. The resin is secreted through the tip of the trichomes because its exudates are cytotoxic to the plant's leaf tissues.[47] When resin heads are ruptured, they release intense aromatic chemicals called terpenes, which are associated with the smell of cannabis and modulate the effects of THC, and the odorless cannabinoids (see pages 39–48.) Trichomes are also the cannabis plant's most delicate structures. And since they contain most of the medicine, trichome heads must be handled extremely gently to avoid rupture and subsequent oxidation of their contents. The size of resin heads atop trichome stalks varies between hemp and drug cannabis cultivars, with the resin heads of drug plants being considerably larger. In their study of dried samples of drug cultivar flowers, Small, Ernst, and Naraine noted that the size of resin heads varied between 40 and 210 microns (The average diameter of a human hair is 50 microns.) On fiber cultivars, the size ranged between 40 and 100 microns.[48] Some of the largest trichomes (> 200 microns) are produced by elite drug cultivars, including Big Sur Holy Weed, Cherry Limeade, Asian Fantasy, Zeta, and Dinachem.

Between the resin head and the trichome stalk is an abscission layer, which happens to allow the resin head to be more easily separated from the stalk after the cannabis is harvested. These little balls of cannabis resin can be collected by sifting dried cannabis over a fine mesh screen, which allows the tiny resin heads to pass through the screen (see page 70). Alternatively, agitating the cannabis in ice water makes the trichomes brittle and the stalks and heads shear off, allowing the resin heads to be sieved from the water with a mesh screen.

The reasons why the cannabis plant secretes its precious resin are somewhat disputed. Claims have been made that the cannabinoids act as ultraviolet (UV) filters to protect the plant's reproductive tissues from sunlight damage. A strong case has also been argued that the resin protects the plant from predation by insects and grazing animals. Taura, et.al, suggested that the intensely cytotoxic CBCA and THCA cannabinoid acids that accumulate in the resin in juvenile and mature plants, respectively, may play a role in the defense systems of cannabis to localize plant damage cause by pathogen attack.[49]

Left: *The cannabis plant produces four different types of trichomes, though only three are of medicinal utility: bulbous, capitate-sessile, and capitate-stalked, with the latter being the most prized.*

GLOSSARY

2-AG (2-arachidonoylglycerol)—an endocannabinoid abundant within the central nervous system

7-hydroxy-CBD—the metabolite produced by liver metabolism of CBD

11-hydroxy-THC—the metabolite produced by liver metabolism of THC

abscission layer—the layer from which the gland head of the cannabis trichome can detach from its stalk

anandamide—*N*-arachidonoylethanolamine or AEA is an endogenous cannabinoid that regulates feeding and suckling behavior, along with baseline pain levels and sleep patterns

anthocyanin—plant pigment responsible for the color of purple cannabis

Ayurvedic—the traditional Indian medical system originating over 3,000 years ago

bagseed—seeds found in dried cannabis flowers

beta-caryophyllene—a spicy terpene produced by some cannabis varieties

bhang—a traditional Indian drink of cannabis, spices, and fermented milk

bioavailability—the portion of a cannabis dose that can be absorbed

BLD—broad-leafleted-drug (BLD) cannabis that is THC-predominant with wide leaflets, commonly referred to as "*indica*"

blood/brain barrier—a barrier consisting of cells that prevent bacteria and large or water-loving molecules from crossing into the central nervous system

blunt—a cannabis cigarette rolled in a cigar wrapper

bract—a leaflike floral structure surrounding the flowers and seed of the female cannabis plant

bubble hash—high-grade cannabis resin, typically extracted using ice water, which bubbles when flame is applied

Cannabaceae—small family of flowering plants including cannabis, hops, and hackberries

cannabichromene (CBC)—a cannabinoid found in cannabis that may be anti-inflammatory

cannabidiol (CBD)—non-psychoactive cannabinoid with broad medical applications; the second most common cannabinoid produced by the cannabis plant

cannabidiolic acid (CBDA)—the acidic form of CBD that is naturally produced by the cannabis plant

cannabidivarin (CBDVA)—CBDV is the propyl variant of CBD, and possesses a shorter molecular side chain than CBD; commonly found in some Nepalese and Indian varieties

cannabigerol (CBG)—non-psychoactive cannabinoid that serves as the precursor used by the plant's enzymes to produce THC and CBD

cannabinoids—compounds that activate cannabinoid receptors, including endocannabinoids produced by humans and animals, phytocannabinoids produced by cannabis and a few other plants, and synthetic cannabinoids

cannabinol (CBN)—the weakly psychoactive breakdown product of THC; not produced by the cannabis plant

cannabis hyperemesis syndrome—an uncommon condition affecting a small population of cannabis users characterized by nausea, vomiting, and abdominal pain that can be alleviated by abstinence from cannabis

capitate-stalked glandular trichomes—specialized plant hairs found on the floral bracts of the female cannabis plant. These trichomes are

characterized by a stalk topped with a glandular head that swells with secretion of cannabinoid and terpene essential oils.

CB_1 receptor—a cannabinoid receptor located primarily in the central nervous system that is activated by cannabinoids

CB_2 receptor—a cannabinoid receptor that is expressed in the peripheral tissues of the immune system, the gastrointestinal system, the peripheral nervous system, and to a lesser degree in the central nervous system

charas—name given to cannabis resin or hashish in India, Nepal, and Pakistan

chemotype—a term for a plant type, including cannabis, that produces a distinct combination of chemical compounds

chromatography—the separation of a mixture by passing it through a medium in which the components move at different rates

cloning (or cutting)—a technique for propagating cannabis in which a piece of the mother plant is removed and placed in a grow medium, where it produces new roots and becomes a new plant

cola or collie—the top flower cluster of a female cannabis plant

cookie casualty—slang term for an oral cannabis overdose

couchlock—slang term for sedation without sleep brought on by high-THC cannabis

cultivar—a plant variety produced in cultivation through selective breeding

cutting—see *cloning*

decarboxylation—in cannabis, the process of converting acidic cannabinoids produced by the plant into their more bioavailable neutral form by removing a carboxyl group (consisting of one carbon, two oxygen, and a hydrogen atom) from the cannabinoid molecule, typically by the application of heat

dispensary—term used in the United States to refer to storefronts providing medical cannabis products

edibles—food products that have been infused with cannabis or cannabis extractions

endocannabinoid system—a system of neuromodulator chemicals and their receptors throughout the body involved in the regulation of appetite, pain, mood, and memory

entourage effect—the synergistic pharmacological effects that emerge through cannabinoid and terpene interaction

first-pass effect—a phenomenon in which the concentration of a drug is greatly reduced through the process of metabolism before it reaches systemic circulation. When cannabis is swallowed it is subjected to extensive first-pass effects by liver metabolism.

flowering time—the period required for cannabis flowers to develop and fully ripen

full melt—high-quality cannabis resin or hashish that readily melts when flame is applied; mistakenly believed to be an indicator of resin quality

ganja—Indian term for seedless female cannabis flower clusters, also known as *sinsemilla*

genotype—specific characteristic of a plant, the expression of which is controlled by genes

Golden Triangle—the drug-producing mountainous region of Myanmar, Thailand, and Laos in Southeast Asia

hashish—cannabis resin

hash oil—solvent extraction of cannabis

headspace—the gas space above the sample in a chromatography vial. Volatile constituents diffuse into their gas phase, forming the headspace gas. Headspace analysis is therefore the analysis of those volatile components.

hemp—low-THC content cannabis used for producing fiber. Hemp often produces CBD rather than THC.

***High Times* Cannabis Cup**—a competition sponsored by *High Times* magazine, held annually in Amsterdam, in which attendees judge herbal cannabis and hashish submitted by coffee shops and seed companies

hubble bubble—a large Afghani water pipe for smoking hashish

hydrophobic—repelling or failing to mix with water

hydroponics—the practice of growing plants without soil, typically in a medium consisting of sand, clay pellets, or gravel with liquid nutrient solutions

indica—a term commonly used to refer to broad-leafleted cannabis varieties

joint—a cannabis cigarette

kif—trichomes collected by sifting or tumbling dried cannabis

kush—a term broadly applied to high-potency varieties of cannabis, some of which originated in the Hindu Kush mountains of Central Asia

landrace—a variety of cannabis which has adapted to the local conditions without minimal intervention

leaflet—a leaflike part of a compound leaf, not borne by a branch or stem

limonene—a terpene possessing an orange aroma produced by some cannabis varieties

linalool—a terpene possessing a spicy, floral aroma produced by some cannabis varieties

lipophilic—literally "fat friendly," used to designate compounds such as cannabinoids that dissolve readily in fats, oils, lipids, and nonpolar solvents such as hexane

menstruum—a solvent used in extracting compounds from plants such as cannabis when preparing tinctures

metabolism—the biochemical modification of drugs by the body, usually by the actions of specialized enzymes

metabolite—the product that remains after a drug is broken down (metabolized) by the body

micro-dosing—a technique for employing the minimum effective dose of a cannabis medicine that delivers the desired outcome or level of effect

mother plant—a cannabis plant kept in a vegetative state (not allowed to flower) so that cuttings or clones may be taken to produce more plants identical to the mother

myrcene—a terpene produced by many plants, including cannabis, hops, and wild thyme, which is pharmacologically sedative and associated with the "*indica*" effect

nail—titanium or quartz fitting used in a specialized pipe ("dabbing rig") to vaporize hash oil. The nail is heated with a gas torch, then a dab of oil is applied, instantly vaporizing it for inhalation.

NLD—narrow-leafleted-drug (NLD) cannabis is THC-predominant with narrow leaflets, commonly called *sativa*

nontoxic cultivation—cultivation that eschews the use of all toxic pesticides and nutrients

ocimene—a terpene with a fruity, floral aroma occasionally found in cannabis

oromucosal delivery—administration that is intended for the oral cavity, especially the buccal mucosa that lines the mouth

pharmacodynamics—what a body does to a drug

pharmacokinetics—what a drug does to a body

phenotype—the distinct characteristics of an individual plant resulting from the interaction of the plant's genotype with the environment in which it is raised

phytocannabinoid—term for the cannabinoids produced by the cannabis plant and a few other plant species

pinene—a terpene with a pine smell produced by cannabis and many other plants, including conifers

plant growth regulator (PGR)—Synthetic plant hormones regulate plant growth, some of which may be harmful to humans

plant tissue culture—a method of growing plant cells, tissues, or organs under sterile conditions on a nutrient culture medium. Plant tissue culture is widely used to produce clones of plants, and recently has been used to produce cannabis.

poddar—an Indian field worker trained to identify and cull male plants from ganja fields

polm—hashish produced by sifting dried flowers through screens to capture the resin-filled trichome gland heads, then pressing the gland heads

postural/orthostatic hypotension—a form of low blood pressure that occurs when you stand up from sitting or lying down, and can be aggravated by cannabis use, especially among naive users. Orthostatic hypotension produces dizziness, lightheadedness, and can even result in unconsciousness.

psychoactivity—the measure of how cannabis and other drugs affect the mind, mood, or other mental states

purple cannabis—cannabis that possesses a genetic tendency to produce anthocyanin when cold stressed, which turns the leaves purple

receptor downregulation—the decrease in the number of receptors available to a cannabinoid molecule, which reduces the sensitivity to cannabinoid effects and underlies the buildup of tolerance

red oil—an early cannabis solvent extraction process developed in the 1940s that produced a clear, red oil

resin—the sticky exudation of the cannabis plant produced by its trichomes

resin head—the oil- and resin-filled gland head of a female cannabis plant's capitate-stalked glandular trichome

sativa—commonly used to describe narrow-leafleted cannabis varieties with stimulating psychoactivity

scissor hash—the resin that accumulates on manicuring tools used to remove extraneous leaf material in the preparation of dried cannabis

seed bank—a company that produce drug cannabis seed for cultivation

single drug/single target—the current system for developing prescription drugs that emphasizes the deployment of a single medicinal agent to target a specific tissue or system within the body

sinsemilla—Spanish for "without seed," referring to seedless, unpollinated female cannabis flowers

spliff—a large cannabis cigarette

sublingual—beneath the tongue

terpene—see *terpenoids*

terpenoids—volatile hydrocarbons found in the essential oils produced by many plants, including cannabis

terpinolene—a terpene found in a few cannabis varieties, as well as cardamom and marjoram

tetrahydrocannabinol (THC) or delta-9-tetrahydrocannabinol—the principal cannabinoid of the cannabis plant, responsible for much cannabis' psychoactivity

THCA (tetrahydrocannabinolic acid)—the acidic form of THC; the form of THC that is produced by the cannabis plant

THCV (tetrahydrocannabivarin)—a variant of tetrahydrocannabinol (THC) having a propyl (3-carbon) side chain. It has antagonistic effects on cannabinoid receptors, therefore it often exhibits effects contrary to THC, e.g., retarding appetite.

tincture—an ethyl alcohol extraction of a plant

tolerance—a reaction to dose (for cannabis or another drug) in which the effects are progressively reduced, requiring an increase in dose in order to achieve the desired effect

trichome—on cannabis, three types of specialized epidermal hairs: capitate-stalked glandular trichomes, capitate-sessile trichomes, and bulbous trichomes

TRPV1 (transient receptor potential vanilloid)—the receptor responsible for initiating inflammatory response and pain

Veganics—a method of cannabis cultivation developed by Kyle Kushman that only employs vegan nutrients

water hash—cannabis resin, extracted using ice water and screens to capture resin heads

water leaves—the small leaves that surround the cannabis flower clusters

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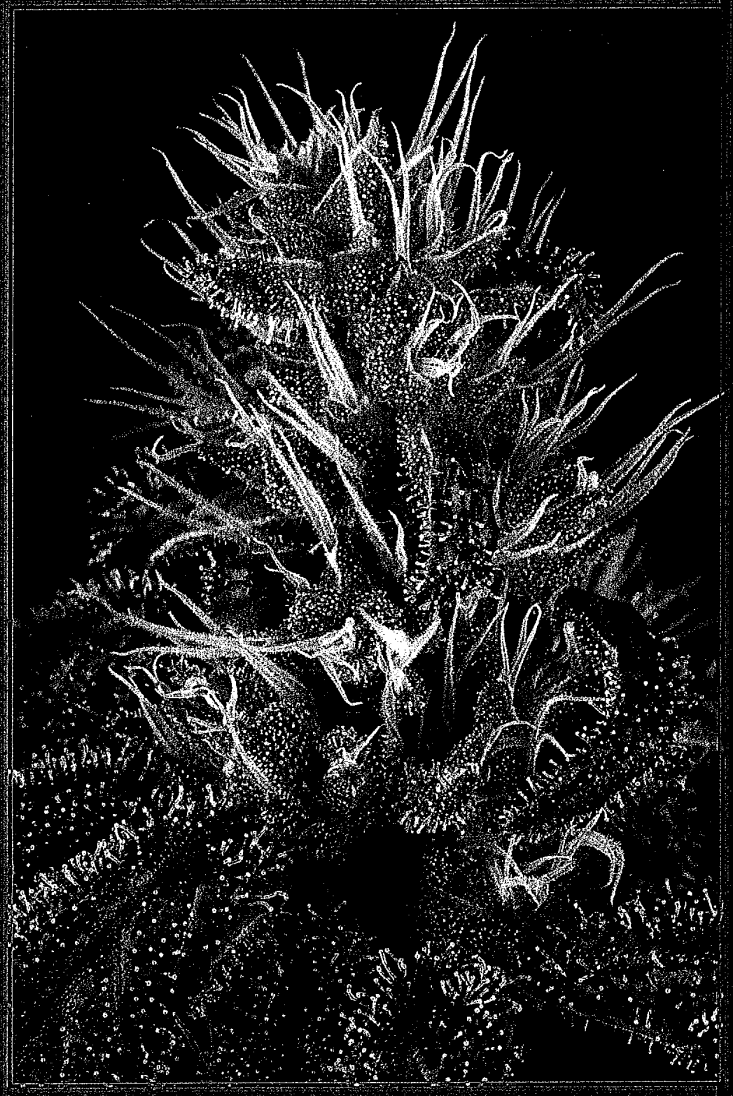

Jorge Cervantes

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A tiny male pre-flower appears near the end of the natural vegetative growth cycle. The little shoot has all the characteristics of a male flower and will continue to grow and then manufacture and release male pollen. (MF)

Mother plants are growing on the right in this garden; rooted clones in the vegetative growth stage are growing under T5 fluorescent lights on the left.

Insects and mites can become a big problem, especially on indoor and greenhouse crops. This aphid has found a new way to disguise itself. The translucent spots on its back look very similar to cannabis resin! (MF)

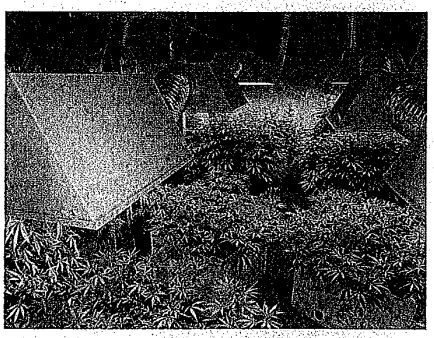
Indoor plants grown from seed are most often left in the vegetative growth stage for 4 to 6 weeks, or until they are a minimum of 12 to 18 inches (30–45 cm) tall, before being induced to flower. Smaller plants can be induced to flower, but this practice is typically not recommended for plants grown from seed and is more practical for crops grown from clones. Premature flowering of young plants from seed can cause sexual instability (intersex expression) in some varieties.

Flowering

Cannabis enters the flowering stage in the late-summer and early fall. As the nights become longer and days shorter, plants are signaled that their annual life cycle is beginning to come to an end, and the flowering stage begins. *C. sativa* and *indica* are photoperiod-determinate plants requiring longer nights and shorter days to induce flowering. *C. ruderalis* is not induced to flower by changes in light cycle and starts flowering when the plants reach 3 or 4 weeks of age, regardless of the light regimen.

Left unpollinated, female flowers develop without seeds, commonly known as "sinsemilla" from the Spanish *sin semilla*, or literally "without seed." Unfertilized female plants continue to produce flowers and become increasingly covered in resinous, glandular trichomes, which produce the essential oils that give cannabis its unique smells (terpenes), in addition to the medicinal compounds known as cannabinoids. Trichomes produce numerous plant secondary metabolites, and recent studies show that some of the molecules produced in cannabis trichomes belong to families of compounds with proven antifungal, antimicrobial, and antibiotic properties. Genes that provide resistance to dehydration are also present, and in many species trichomes are known to inhibit insect movement. All of these factors support the hypothesized role of trichomes and their by-products providing protection from insects, fungi, UV light, and so forth, that might damage the developing seed within the female flower during gestation.

After weeks of heavy flower production, cannabinoid content and other secondary metabolite production peaks in the unfertilized sinsemilla flowers. This is the ideal moment for harvest; no new flowers are being produced, and the unseeded floral clusters are at their maximum coverage o glandular trichomes rich in cannabinoids and other essential oils.



Small indoor plants typically yield from 1 to 4 ounces (30–120 gm). Outdoors and in greenhouses, cannabis is able to stay in the vegetative growth stage for several months and reach final heights of from 5 to 25 feet (1.5–8 m). Given an ideal environment, the longer vegetative period allows single plants to produce 5 to 10 pounds (2–5 kg) of cannabinoid-rich dried flowers.

Male plants produce pollen, which is released into the wind and by chance land upon the stigma of a nearby unpollinated female flower. The flower becomes fertilized, and the seed that will form the next generation begins to grow under the protective layer of trichomes found on the female bract. After shedding all the pollen from the staminate flower, male plants senesce and eventually die. The seeds in the female plant continue to mature for 3 to 6 weeks afte fertilization. Once ripe, the seeds will split through the protective bract, and the female plant will also begin to senesce, leaving the seeds to fall to the ground.

Indoors, flowering can be induced in most commercial varieties of cannabis by providing 12 hours of uninterrupted darkness and 12 hours of light every 24 hours. Plants that developed in tropical regions often start flowering when given 12-hour days and nights, but flowering can continue for up to 20 weeks. Some growers who cultivate equatorial *sativa* varieties will increase the period of darkness to 13 hours and beyond, in an attempt to mimic the natural light cycle in the tropics.

Plant growth structure changes during flowering. New shoot and leaf growth slows and flowers begin to form. Cannabis has both male and female

This cannabis flower appears to be frosted with cannabinoid-rich resin and will be ready to harvest in a couple of days. The cannabis varieties available today make growing a potent medical cannabis crop easy.

Some varieties such as 'Power Plant' produce big central buds very quickly.

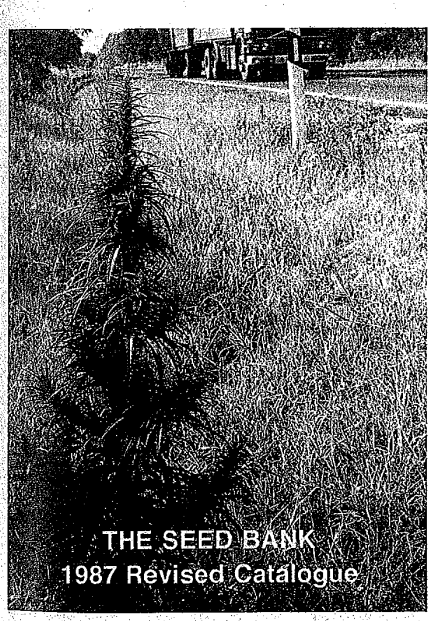
This garden has been flowering for 4 weeks. Small indoor gardens like this 40-inch-square (1 m²) garden are easy to set up. Note that this garden is being watered automatically and requires little maintenance.

plants. When both male and female flowers are in bloom, male flowers release pollen into the air that lands on female flowers, thereby fertilizing them. The male dies after producing and shedding all its pollen. Seeds form and grow within the female flowers. As the seeds are maturing, the female plant slowly senesces and dies. The mature seeds then fall to the ground and germinate naturally or are collected for planting next spring.

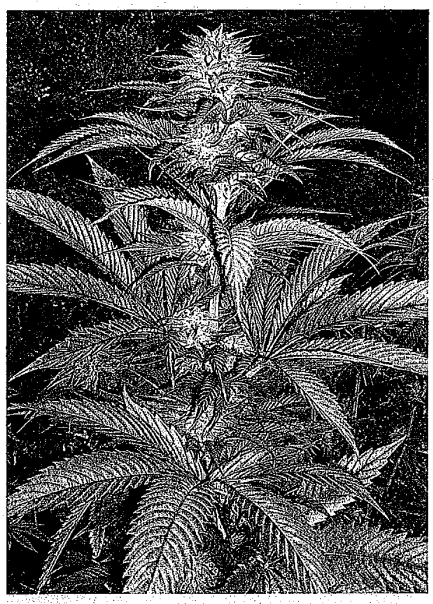
Mother Plants

Vigorous, healthy female plants known to produce high-quality flowers with desirable cannabinoid profiles make the best mother plants, although any plant deemed desirable can be made into a mother, or donor, plant. Mother plants are given 18 to 24 hours of light daily to ensure they stay in the vegetative growth stage. For vegetative reproduction, stem cuttings of shoots or branches are cut from mother plants and placed in a growth medium to establish roots. The rooted stem cuttings are often called "clones," since the new plants share the exact genetic code of the mother plant and thus will grow identically when given the same environment. Cultivating several vigorous, healthy, insect-free mother plants is the key to having a consistent supply of all-female clones.

A single mother plant can supply a garden with hundreds of clones in a



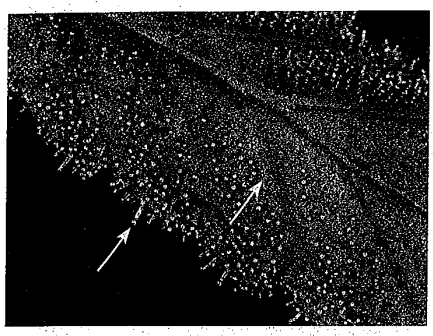
This C. ruderalis *plant was growing along the highway in Hungary in the mid-1980s, when Nevil, founder of the Seed Bank, snapped this photo. Breeders have been working with daylight-neutral* ruderalis *genetics for many decades. In the last few years* ruderalis *varieties have been crossed with "regular" varieties that impart a strong cannabinoid profile and harvest weight.*



Genetics and temperature play a big role in purple-colored leaves. Some plants like this 'Purple Pineberry' are predisposed to turning color. When grown in cool weather the colors are more pronounced.

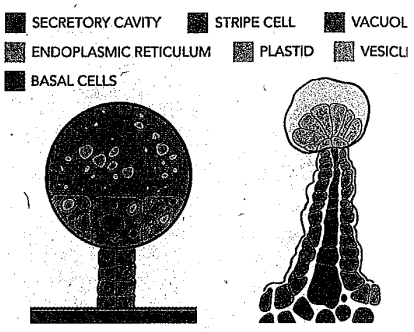
Male plants are normally removed from the garden so that they do not pollinate female plants. The male plant on the left is in full flower and spreading its pollen to all the female plants. Females will grow ripe seeds in 6 to 8 weeks.

APPX042



Capitate-sessile (bulbous glands) are visible near the center of the leaf. Capitate-stalked resin glands grow progressively taller and are clearly visible on the edges of this leaf of 'Blueberry × Sandstorm'.

Long, thin stalks support the ball-like heads of capitate-stalked resin glands.



Capitate-stalked resin glands are full of chen ical activity. This is where the majority of cannabinoids occur. Disc cells, and principa the secretory cavity, of the gland perform a k role in the physiology of secondary products. But these activities are not yet completely understood.

Capitate-Sessile Resin Glands

Capitate-sessile glands measure from 25 to 100 micrometers across the globular-shaped head or bulb. The bulb appears to lie flush on young and immature plants. One to 4 cells below the bulb is the beginning of a stalk that elongates and grows during flowering to transform the capitate-sessile gland into a capitate-stalked resin gland.

The globular head or ball is composed of 8 to 16 cells that form a dome. The specialized cells secrete a cannabinoid-rich resin that collects between the rosette, and its outer membrane appears spherical.

Capitate-Stalked Resin Glands

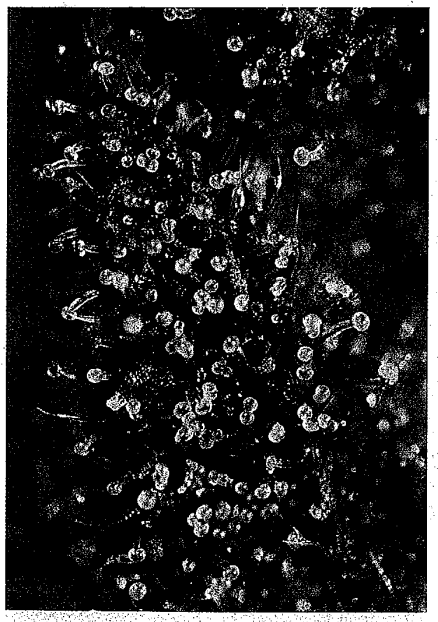
Capitate-stalked trichomes appear and become visible with the naked eye when flowers form. Use a 10X to 30X handheld lens to distinguish resin glands—bulbous, capitate-sessile, capitate-stalked, and nonglandular trichomes. Look for them on female flower bracts and new flower growth and surrounding foliage where they form heavily on the plant. The resin glands also tend to accumulat heavily on veins of lower leaf surfaces around flower buds. Cannabinoid-potent varieties typically contain highe concentrations of capitate-stalked resin glands.

Male plants and flowers contain smalle and lower concentrations of less-potent stalked glands than found on the femal bracts. Male flowers typically have a ro of large capitate-sessile glands along opposite sides of anthers.

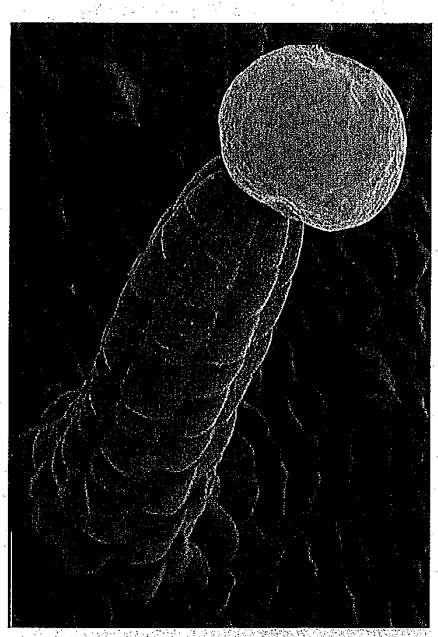
Unless clearly visible on leaf surfaces, few cannabinoids are found on older leaves. Leaves around flower buds are much more densely populated with capi tate-stalked resin glands rich in cannabinoids.

Capitate-stalked resin glands are composed of a stalk with a bulbous head. They look like a post with a knob, ball, or bulb at the top. They form mainly on flower buds and small leaves. The highe concentration of cannabinoids is locatec at the base of the bulbous resin head.

In the above illustration, disc cells are shown attached to foliage by stipe cells (red) and basal cells (green). The plasti (orange) in disc cells secrete lipoplasts where they synthesize lipophilic substances that accumulate and ultimately



Look closely and you can see the pointy cystolithic, nonglandular trichomes alongside the more numerous capitate-stalked glandular trichomes.

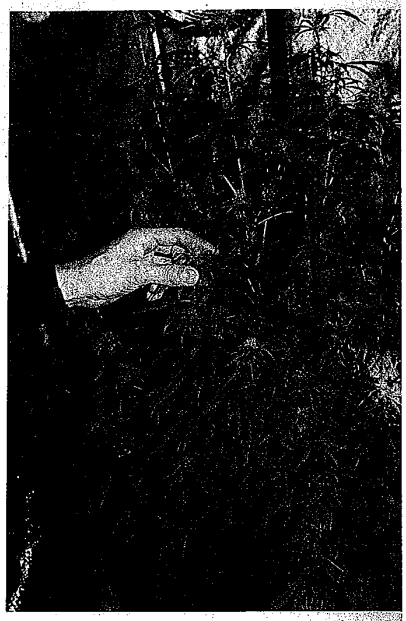


This electron scanning microscopic view at 370X of a single capitate-stalked resin gland allows us to distinguish individual cells. These 150- to 500-micrometer-tall resin glands are pretty tough when they are young and strong. But once they age they become more fragile.

APPX043

Distinct seed bracts with attached stigmas are easy to distinguish on this 1979 landrace variety from Thailand. (MF)

Flower buds are just starting to develop on this outdoor sativa*-dominant plant. Notice that the distance between internodes decreases as stigmas appear and buds develop.*



Tiny developing buds with stigmas cover thi indoor crop in the Netherlands.

cause sex reversal. Inducing flowering before pre-flowers develop does not make plants flower faster; plants will flower at about the same time as if you had waited for pre-flowers to develop.

Female Flowering

Female cannabis is prized for heavy cannabinoid production and weighty flower yield. Ideal female, *indica*-dominant, indoor varieties grow squat and bushy with branches close together on the stem and dense foliage on branches. Outdoor and greenhouse varieties have a similar growth habit with a larger profile. Indoors most varieties show the first female flowers 1 to 3 weeks after inducing flowering with the 12-hour photoperiod. Outdoors, pre-flowers appear a few weeks after planting, and flowering is induced with an 11- to 13-hour day/night photoperiod.

High-quality marijuana consists entirely of female flower clusters; distinct clusters of female marijuana flowers are called buds. Female flowers are about 0.1 to 0.2 inches (2.5–5.1 mm) long and usually form in pairs. But you will see such pairing only in "running" buds most commonly seen in Southeast Asian varieties or on plants stretching for light. More typically, flowers grow tightly together, forming egg-shaped or teardrop-shaped clusters usually between 0.8 and 3 inches (2–7.6 cm) long; each cluster generally consists of between 30 and 150 densely packed flowers.

Clusters of flower buds (colas) develop rapidly for the first 4 or 5 weeks, after which they grow at a slower rate. Buds put on much of their harvest weight as they swell during the last 2 or 3 weeks of growth before harvest. Pure *sativas* originating in the tropics can flower for 4 months or longer! Once the ovule has been fertilized by male pollen, seed bra formation and resin production slow, a seed growth starts.

Outdoors in Northern California this sativa-indica *cross has plenty of space and sunlight to grow to its fullest potential. Indoors, plants grow much smaller regardless of genetic background.*

White, fuzzy female stigmas are fertile as soon as they appear. Unfertilized, these flower buds will continue to develop as sinsemilla. Make sure to kee all male plants and male pollen away from female flowering plants. If female flowers are fertilized by male pollen, seeds will develop and other flower buc growth will slow or stop.

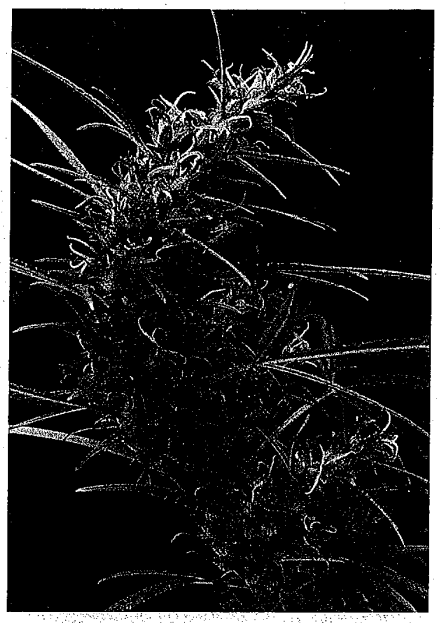
C. indica, *C. sativa*, and *C. ruderalis* all have different flowering habits. See "Sinsemilla Flowering" below for more information.

See chapter 25, *Breeding*, for complete information and detailed images of female cannabis flowers and "Seed-Crop Flowering"; see chapter 17, *Light, Lamps & Electricity*, for more information on photoperiod and flowering.

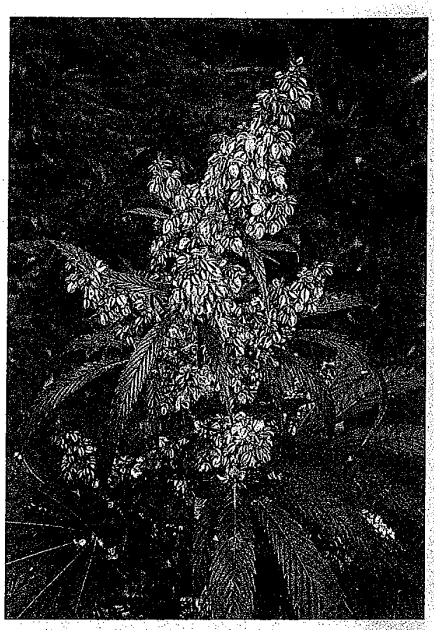
Sinsemilla Flowering

Sinsemilla (pronounced *sin-semiya*) is derived from two Spanish words: *sin*, which means without, and *semilla*, which means seed. Sinsemilla is the word that describes flowering female

This Nigerian landrace flower bud has a wispy growth habit but is still boasts lots of cannabinoid-rich resin. (MF)



Sativa *flower buds like this South Indian bud grown in 1981 are much lighter and form more slowly than* indicas. *(MF)*



This beautiful 'Purple Pineberry' male plant is heavy with flowers that are just starting to release pollen.

cannabis tops that have not been fertilized by male pollen.

Highly prized medicinal sinsemilla flower buds are the most potent part of any variety, with a proportionately large volume of cannabinoids per flower bud. Unpollinated female plants continue to flower until bract formation and cannabinoid-rich resin production peak, 6 to 10 weeks after turning the lights to 12 hours indoors, inducing flowering in a light deprivation greenhouse or naturally flowering outdoors. During 6 to 10 weeks of flowering, seed bracts develop and swell along the stem, yielding more and heavier flower buds than pollinated, seeded flowers.

Cannabis ruderalis flowers when it is chronologically ready, after about 3 weeks of growth. Many growers report best results with a 20-hour light and 4-hour dark period. Most European seed companies have developed autoflowering-feminized crosses of cannabis *ruderalis* × *indica* × *sativa*. Productive varieties produce 3 to 4 ounces (85–113.4 gm) of dried cannabis flower buds with each 70- to 80-day crop from seed.

Make any female cannabis plant sinsemilla by removing male plants as soon as they are identified. Removing males virtually guarantees that male pollen will not fertilize succulent female stigmas. Be aware, however, that pollen dispersed from wild or cultivated male cannabis plants could also be floating in the air. Or sometimes a few early grains of pollen are shed by premature male plants that have not been culled. And sometimes an intersex plant with a few male flowers will sprout on a predominately female plant. Read about intersexuality in chapter 25, *Breeding*.

Indica*-dominant 'Shooting Star' from Hammerhead Genetics shows a completely different growth habit when cultivated outdoors.*

This crop of 'Bonkers' with a very strong indica *influence grows well indoors and in greenhouses.*

'Matanuska Tundra' is predominately indica *and developed in the Matanuska-Susitna (Mat-su) Valley in Alaska, in conjunction with Sagarmatha Seeds.*

Cannabis
A Complete Guide

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11 Cannabis Chemistry: Cannabinoids in *Cannabis*, Humans, and Other Species

Plants produce thousands of chemical compounds, and *Cannabis sativa* is no exception. Chemical aspects of the stem fiber, oilseeds, and essential oil are dealt with in other chapters. This chapter deals with the cannabinoids, the chief chemicals of interest. As will be discussed, there is evidence of compounds that are structurally similar to the cannabinoids in a few other plants.

Much more importantly, there are analogous (structurally dissimilar but functionally similar) compounds, also considered to be cannabinoids, in humans and other animals, that affect metabolism in countless ways. Indeed, as discussed in Chapter 13, it is now clear that ingestion of plant and synthetic cannabinoids affects humans, for better or worse, by altering the body's metabolic engines, which normally employ internally produced cannabinoids. Also, in many plants, there are chemicals that are structurally dissimilar to the cannabinoids of *Cannabis* or humans that can also influence animal metabolism (including human physiology) by influencing the metabolic system that handles cannabinoids. However, this chapter is mostly concerned with the cannabinoids of *C. sativa*: where they are produced in the plant, variation of concentrations in different kinds of plant and in different growth circumstances, and their basic chemistry.

GLANDULAR TRICHOMES OF *CANNABIS*: THE PLANT'S DRUG FACTORIES

Most plant species have very small epidermal appendages termed "trichomes" on the aerial parts, widely considered to be protective against pathogens and arthropod herbivores (Levin 1973), although numerous other hypotheses have been proposed to explain their presence (Wagner 1990; Werker 2000; Theis and Lerdau 2003; Wagner et al. 2004). Trichomes are sometimes termed "hairs" because they are often hair-like, but most biologists reserve the term hair for animals. Nonglandular trichomes were discussed in Chapter 6; this section deals with glandular trichomes (which, like human glands, synthesize particular chemicals).

About 30% of flowering plants possess "glandular trichomes," producing secondary chemicals, usually at the tip of the structure, often in distinctive head-like containers (Dell and McComb 1978; Glas et al. 2012). (Secondary chemicals are organic compounds produced during metabolism, which are not directly involved in essential biological structures or in normal development or reproduction.) The substances manufactured are frequently known to serve the plant as protective agents but are also often immensely useful to humans as natural pesticides, food additives, fragrances, and pharmaceuticals (Duke et al. 2000). The psychoactive chemicals of *Cannabis* (cannabinoids, principally THC) are produced in specialized tiny secretory trichomes, which are almost always multicellular (the nonglandular trichomes of *C. sativa* are unicellular).

There is by no means agreement by botanists how multicellular secretory trichomes should be classified, either in plants generally or *Cannabis* specifically. The most important criterion for distinguishing classes of trichomes in *Cannabis* is stalk length, and size is next in importance.

As many as three classes of epidermal secretory glandular trichomes can be distinguished on the basis of basal stalk. The so-called stalkless or sessile type, which hardly resembles a hair-like structure, may have a very short stalk that is not visible as it is hidden under the gland head (Figure 11.1). These glandular trichomes tend to be comparatively small. The long-stalked

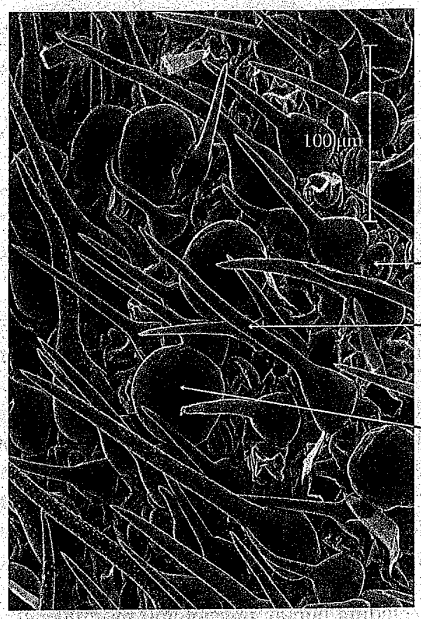


FIGURE 11.1 Scanning electron micrograph of the abaxial (lower) surface of a young leaf of *C. sativa*, showing simple unicellular hairs and stalkless (sessile) multicellular secretory glands (both representing kinds of "trichomes"). Prepared by E. Small and T. Antle.

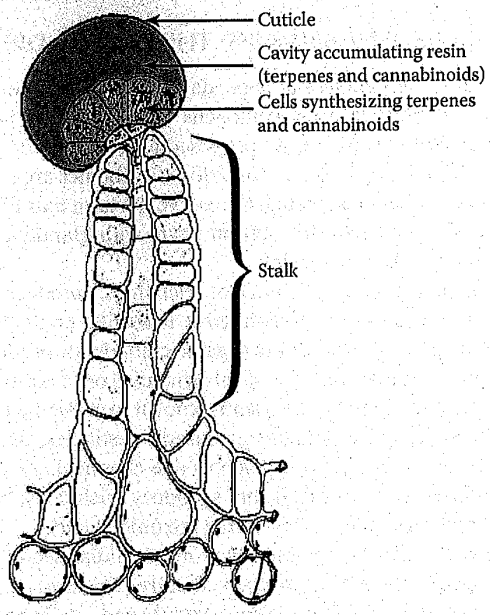


FIGURE 11.2 Diagram of longitudinal section of a long-stalked secretory gland of *C. sativa*. Resin containing cannabinoids is synthesized by the cells in the basal part (shown in red) of the more or less spherical head and accumulates in the cavity (shown in green) above these cells within the external membrane covering the head. Sometimes, the head breaks open and the resin seeps over the adjacent plant tissues. Adapted from Briosi and Tognini (1894).

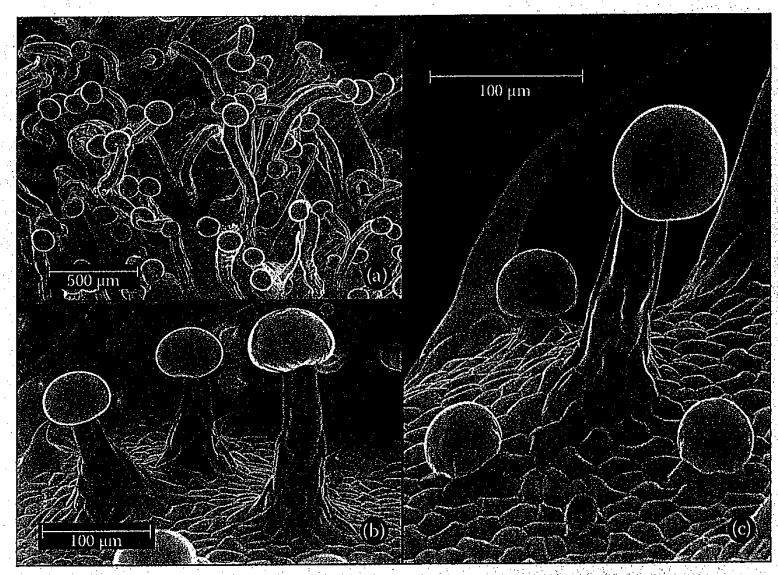


FIGURE 11.3 Scanning electron micrographs of secretory glands of the abaxial (lower, outer) epidermis of perigonal bracts (i.e., the single bract covering each female flower) of high-THC forms of *C. sativa*. (a) Dense concentration of long-stalked glands. (b) Three long-stalked glands. (c) A long-stalked secretory gland (center) around which are three short-stalked multicellular glands. Also shown is a nonglandular hair (a unicellular structure). Resin containing cannabinoids is synthesized in the spherical heads of the glandular trichomes. The perigonal bracts are the most intoxicating plant organ of high-THC forms of the plant. Prepared by E. Small and T. Antle.

oung leaf of *C. sativa*, both representing kinds

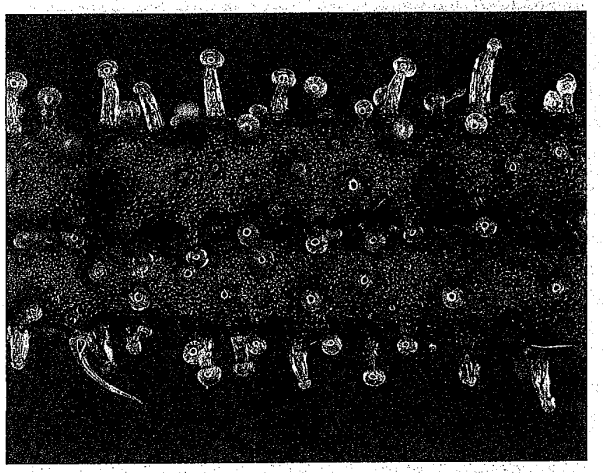


FIGURE 11.4 Light microscope photo, edge view, of a young leaf of *C. sativa*, cultivar FINOLA, covered by long-stalked secretory glandular hairs.

C. sativa. Resin connore or less spherical l membrane covering issues. Adapted from

(Figures 11.2 through 11.4) and short-stalked (Figure 11.3c, in part) types are distinguished arbitrarily on the basis of stalk length and tend to be comparatively large. Additionally, a very distinctive kind of glandular trichome occurs on the anthers (Figure 11.5). In all of these cases, the essential part of the gland is a more or less hemispherical head, sometimes compared in size to the head of a pin. Inside the head at its base there are specialized secretory "disk cells," and above these

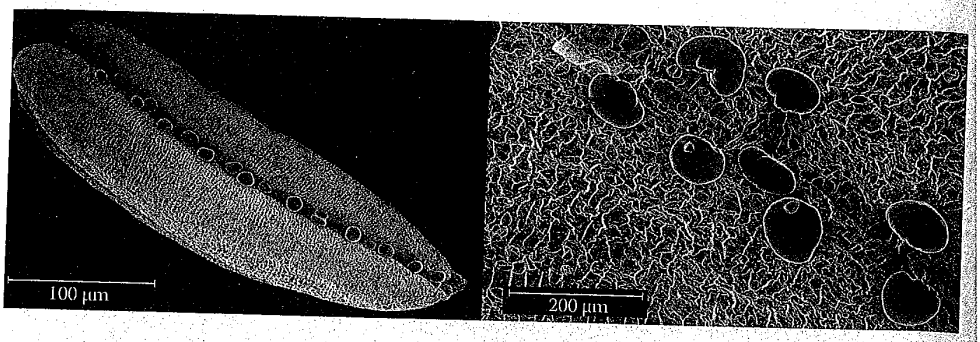


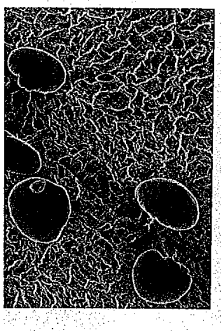
FIGURE 11.5 Scanning electron micrographs of short-stalked secretory glands on an anther of *C. sativa*. Left: A row of glands separating the pollen-containing segments. Right: Close-up of several of the glands. Prepared by E. Small and T. Antle.

there is a noncellular cavity where secreted resin is accumulated, enlarging the covering sheath (a waxy cuticle) of the head into a spherical blister (Figure 11.2). The resin is a sticky mixture of cannabinoids and a variety of terpenes. In marijuana varieties, the resin is rich in the cannabinoid THC, the chief intoxicant of *Cannabis*, as discussed later.

Happyana et al. (2013) found that the stalks of stalked glandular trichomes contained traces of cannabinoids, but whether this is the result of contamination is unclear, and it does seem that most, if not all, of the cannabinoids are synthesized in the secretory disk cells. Lanyon et al. (1981) showed that nearly all of the cannabinoids of the stalked glands occur in the noncellular cavity above the disk cells. Its sheath may eventually rupture, releasing resin onto the surface of the plant. Hot conditions seem to favor release of the resin, but apparently there has been selection for strains that retain resin within the gland heads so that when fabric sieves are used to prepare hashish (as described in Chapter 12), they will not become clogged with sticky resin. However, strains that produce extruded sticky resin have been favored when leather or hands are used to rub off the resin for hashish preparation (Clarke 1998a; McPartland and Guy 2004a).

Various authors (e.g., Clarke and Watson 2002; Mahlberg and Kim 2004) have characterized a narrowed portion of the top of the stalk, just below the base of the head, as an "abscission layer." In the living state, the gland heads always burst immediately when touched but do not readily fall off from the living plant, so just why stalked glandular trichomes develop a constricted area just beneath the gland heads is unclear adaptively. In no way is the "abscission layer" of cannabis stalked trichomes comparable to the abscission zone at the base of the foliage of deciduous trees or at the base of fruits that abscise at maturity (as described in detail in Chapter 3 for the fruit of *Cannabis*). There seems no obvious reason why dropping the heads is adaptive from the plant's perspective (which they simply do not do while fresh) but when the plants is dried, the gland heads do fall off very readily when agitated. This facilitates harvesting the heads for hashish preparation, and some strains may have been selected for ease of harvesting the heads for making intoxicating preparations.

The secretory glands differ notably in density on different organs of the plant (high concentrations occur on the lower surface of the young leaves, on young twigs, on the sepals, anthers [Figure 11.5], and especially on the perigonal bracts [Figure 11.3], where they are very dense and productive). Given this distribution, the glands seem to be protective of young and reproductive above-ground exposed tissues (the roots and achenes, which are not exposed, lack glands). Clarke (1998a) observed that marijuana varieties differ widely in the size of glands, but there is evidence that selection of high-THC forms has favored greater gland size, greater gland density, or both (Small and Naraine 2016b). Small and Naraine (2016b) found that a sample of elite pharmaceutical strains all had much larger gland heads than those of industrial hemp cultivars. Mahlberg and



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Kim (2004) recorded that the cannabinoid content of the long-stalked glands they examined possessed about 20 times the cannabinoid content of the sessile glands. The glands of *Cannabis* have been described in detail by Potter (2009) and extensively examined by Mahlberg and associates (Hammond and Mahlberg 1977, 1978; Turner et al., 1980, 1981a,b; Mahlberg et al. 1984; Mahlberg and Kim 1991, 1992, 2004; Kim and Mahlberg 1995, 1997, 2003). It has been established that cannabinoids are synthesized within the secretory glands, not elsewhere, and transported to the glands (Sirikantaramas et al. 2005; Stout et al. 2012). By contrast, the alkaloid nicotine is synthesized in the roots of tobacco plants and transported to trichomes of the foliage, a phenomenon recorded in several other plants (Vivanco and Baluška 2012).

Comparatively small glands with very small heads (sometimes unicellular, typically less than 20 microns in diameter) and very short stalks (sometimes just two cells) often occur over much of the plant. Such glands are often termed "bulbous," in contrast to the larger glands described previously, which are termed "capitate" (meaning head-like). (Bulbous and capitate are not obviously distinguishable terms and can be misleading.) The small glands could simply have failed to develop into larger glands. They are so small that they cannot produce appreciable amounts of the cannabinoids. A long-stalked gland with a capitate secretory head is widely referred to as a "stalked-capitate trichome" and is somewhat reminiscent of a golf ball sitting atop a golf tee.

Most THC in cannabis drug preparations is located in the resin heads of the stalked glandular trichomes, which cover the protective perigonal bracts enveloping the pistils and seeds. Stalked glands are located mainly on the perigonal bracts in the inflorescence but also often occur on the veins of the underside of the leaves. Small and Naraine (2016b) found that after harvest, the resin heads shrink in diameter in exponential decay fashion under ambient room conditions, losing about 15% of their diameter in the first month, rising to 25% over the first year, 30% by 40 years, and 33% after a century (Figure 11.6). An equation accounting for the asymptotic curve descriptive of the progression of shrinkage was determined (original gland head diameter in microns = observed diameter) divided by ([0.5255 + 0.4745 multiplied by time in days to the power −0.1185]), so that if the age of a specimen is known, the original diameter of the gland heads in the fresh state can be extrapolated.

There is controversial evidence for trace amounts of cannabinoid production outside of the epidermal glands. Laticifers (latex-containing internal tissues or cells) occur in the foliage and stems (Zander 1928). These are of the unbranched, nonarticulated form, made up of an elongated secretory cell producing a kind of latex. Furr and Mahlberg (1981) reported that they detected cannabinoids

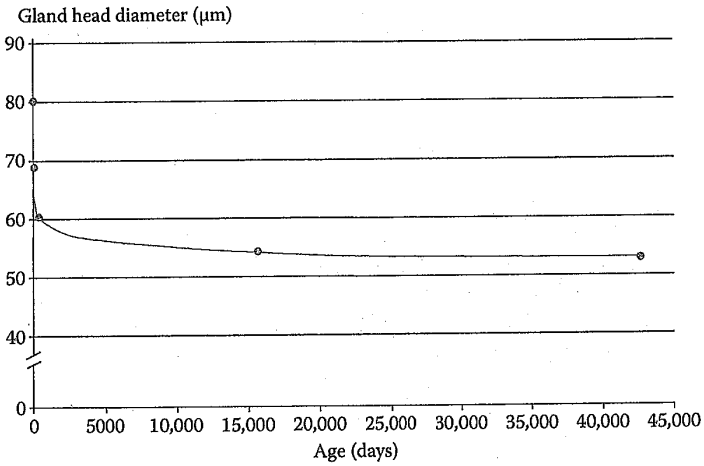

FIGURE 11.6 Time-shrinkage curve for gland head diameter, based on Small, E., Naraine, S.G.U., *Gene. Resour. Crop Evol.*, 63, 349–359, 2016.

§ 13-1410, narcotics offenses ~~as provided in~~ under § ~~36-1002.02, 36-1002.03 or 36-1002.04~~ 13-3406, subsection A, paragraph 3, 5 or 6, kidnapping under § 13-1304, burglary under § 13-1506, 13-1507 or 13-1508, arson of an occupied structure under § 13-1704, robbery under § 13-1902, 13-1903 or 13-1904, escape under § 13-2503 or 13-2504, and in the course of and in furtherance of such offense or immediate flight from such offense, such person or another person causes the death of any person.

B. Homicide, as defined in ~~paragraph 2 of~~ subsection A, paragraph 2 of this section, requires no specific mental state other than what is required for the commission of any of the enumerated felonies.

C. First degree murder is a class 1 felony and is punishable by death or life imprisonment as provided by § 13-703.

Sec. 6. Section 13-2901, Arizona Revised Statutes, is amended to read:

§ 13-2901. Definitions

In this chapter, unless the context otherwise requires:

~~1. "Cannabis" means the following substances under whatever names they may be designated:~~

~~(a) Marijuana.~~

~~(b) All parts of the plant cannabis sativa L., whether growing or not; the seeds of such plant; the resin extracted from any part of such plant, and every compound, manufacture, salt, derivative, mixture or preparation of such plant, its seeds or resin, but shall not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake or the sterilized seed of such plant which is incapable of germination.~~

~~(c) The resin extracted from such tops.~~

~~(d) Every compound, manufacture, salt, derivative, mixture or preparation of such resin, tetrahydrocannabinol (T.H.C.), or of such tops from which the resin has not been extracted.~~

1. "Marijuana" means all parts of any plant of the genus cannabis, from which the resin has not been extracted, whether growing or not, and the seeds of such plant. Marijuana does not include the mature stalks of such plant, or the sterilized seed of such plant which is incapable of germination.

2. "Public" means affecting or likely to affect a substantial group of persons.

Sec. 7. Section 13-2905, Arizona Revised Statutes, is amended to read:

§ 13-2905. Loitering; classification

A. A person commits loitering if such person intentionally:

1. Is present in a public place and in an offensive manner or in a manner likely to disturb the public peace, solicits another person to engage in any sexual offense; or

2. Is present in a transportation facility and after a reasonable request to cease or unless specifically authorized to do so, solicits or engages in any business, trade or commercial transactions involving the sale of merchandise or services; or

3. Is present in a public place with one or more persons to unlawfully possess, use or sell ~~cannabis or~~ marijuana, dangerous drugs or narcotic drugs; or

4. Is present in a public place to beg, unless specifically authorized by law; or

5. Is present in a public place, unless specifically authorized by law, to gamble with any cards, dice or other similar gambling devices; or

6. Is present in or about a school, college or university building or grounds after a reasonable request to leave and either does not have any reason or relationship involving custody of or responsibility for a pupil or student or any other specific

legitimate reason for being there or does not have written permission to be there from anyone authorized to grant permission.

B. Loitering under subsection A, paragraphs 3 and 6 is a class 1 misdemeanor. Loitering under subsection A, paragraphs 1, 2, 4 and 5 is a class 3 misdemeanor.

Sec. 8. Title 13, Arizona Revised Statutes, is amended by adding chapter 34, to read:

CHAPTER 34.—DRUG OFFENSES

§ 13–3401. Definitions

In this chapter, unless the context otherwise requires:

1. "Administer" means the direct application, injection, inhalation or ingestion of a substance to the body of a person.

2. "Amidone" means any substance identified chemically as (4-4-diphenyl-6-dimethylamine-heptanone-3), or any salt of such substance, by whatever trade name designated.

3. "Board" means the Arizona state board of pharmacy.

4. "Cannabis" means the following substances under whatever names they may be designated:

(a) The resin extracted from any part of a plant of the genus cannabis, and every compound, manufacture, salt, derivative, mixture or preparation of such plant, its seeds or resin. Cannabis does not include oil or cake made from the seeds of such plant, any fiber, compound, manufacture, salt, derivative, mixture or preparation of the mature stalks of such plant except the resin extracted from the stalks or any fiber, oil or cake or the sterilized seed of such plant which is incapable of germination.

(b) Every compound, manufacture, salt, derivative, mixture or preparation of such resin or tetrahydrocannabinol.

5. "Coca leaves" means cocaine, its optical isomers and any compound, manufacture, salt, derivative, mixture or preparation of coca leaves, except derivatives of coca leaves which do not contain cocaine, ecgonine or substances from which cocaine or ecgonine may be synthesized or made.

6. "Dangerous drug" means the following by whatever official, common, usual, chemical or trade name designated:

(a) Any material, compound, mixture or preparation which contains any quantity of the following hallucinogenic substances, their salts, isomers and salts of isomers, unless specifically excepted, whenever the existence of such salts, isomers and salts of isomers is possible within the specific chemical designation:

(i) Bufotenine.
(ii) Diethyltryptamine.
(iii) Dimethyltryptamine.
(iv) 4-methyl-2, 5-dimethoxyamphetamine.
(v) Ibogaine.
(vi) Lysergic acid amide.
(vii) Lysergic acid diethylamide.
(viii) Mescaline.
(ix) Methoxymethylenedioxyamphetamine (MMDA).
(x) Methylenedioxyamphetamine (MDA).
(xi) N-ethyl-3-piperidyl benzilate (JB-318).
(xii) N-methyl-3-piperidyl benzilate (JB-336).
(xiii) N-(1-phenylcyclohexyl) ethylamine (PCE).
(xiv) 1-(1-phenylcyclohexyl) pyrrolidine (PHP).

(xv) 1-(1-(2-thienyl)-cyclohexyl) piperidine (TCP).

(xvi) Para-methoxyamphetamine (PMA).

(xvii) Psilocybin.

(xviii) Psilocyn.

(xix) Trimethoxyamphetamine (TMA).

(b) Any material, compound, mixture or preparation which contains any quantity of the following substances having a potential for abuse associated with a stimulant effect on the central nervous system:

(i) Amphetamine, its salts, optical isomers and salts of its optical isomers.

(ii) Phenmetrazine and its salts.

(iii) Any substance which contains any quantity of Methamphetamine, including its salts, isomers and salts of isomers.

(iv) Methylphenidate.

(c) Any material, compound, mixture or preparation which contains any quantity of the following substances having a potential for abuse associated with a depressant effect on the central nervous system:

(i) Any substance which contains any quantity of a derivative of barbituric acid, or any salt of a derivative of barbituric acid, unless specifically excepted.

(ii) Chloral betaine.

(iii) Chloral hydrate.

(iv) Chlordiazepoxide.

(v) Chlorhexadol.

(vi) Diazepam.

(vii) Ethchlorvynol.

(viii) Ethinamate.

(ix) Glutethimide.

(x) Ketamine.

(xi) Lysergic acid.

(xii) Meprobamate.

(xiii) Methaqualone.

(xiv) Methyprylon.

(xv) Paraldehyde.

(xvi) Petrichloral.

(xvii) Phencyclidine.

(xviii) Scopolamine.

(xix) Sulfondiethylmethane.

(xx) Sulfonethylmethane.

(xxi) Sulfonmethane.

7. "Deliver" means the actual, constructive or attempted exchange from one person to another, whether or not there is an agency relationship.

8. "Director" means the director of the department of health services.

9. "Dispense" means distribute, leave with, give away, dispose of or deliver.

10. "Isoamidone" means any substance identified chemically as (4-4-diphenyl-5-methyl-6-dimethylaminohexanone-3), or any salt of such substance, by whatever trade name designated.

11. "Isonipecaine" means any substance identified chemically as (1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester), or any salt of such substance, by whatever trade name designated.

12. "Ketobemidone" means any substance identified chemically as (4-(3-hydroxyphenyl)-1-methyl-4-piperidylethyl ketone hydrochloride), or any salt of such substance, by whatever trade name designated.

13. "Licensed" means authorized by the laws of this state to do certain things.

14. "Manufacturer" means a person who lawfully, by compounding, mixing, cultivating, growing or other process, produces or prepares narcotic or dangerous drugs in the usual course of business, but does not include a pharmacist or pharmacy which compounds narcotic or dangerous drugs to be sold or dispensed on prescriptions.

15. "Marijuana" means all parts of any plant of the genus cannabis, from which the resin has not been extracted, whether growing or not, and the seeds of such plant. Marijuana does not include the mature stalks of such plant, or the sterilized seed of such plant which is incapable of germination.

16. "Narcotic drugs" means the following, whether of natural or synthetic origin and any substance neither chemically nor physically distinguishable from them:

(a) Acetylmethadol.
(b) Allylprodine.
(c) Alphacetylmethadol.
(d) Alphameprodine.
(e) Alphamethadol.
(f) Alphaprodine.
(g) Amidone (Methadone).
(h) Anileridine.
(i) Benzethidine.
(j) Betacetylmethadol.
(k) Betameprodine.
(*l*) Betamethadol.
(m) Betaprodine.
(n) Bezitramide.
(o) Cannabis.
(p) Clonitazene.
(q) Coca leaves.
(r) Dextromoramide.
(s) Diampromide.
(t) Diethylthiambutene.
(u) Difenoxin.
(v) Dihydrocodeine.
(w) Dimenoxadol.
(x) Dimepheptanol.
(y) Dimethylthiambutene.
(z) Dioxaphetyl butyrate.
(aa) Diphenoxylate.
(bb) Dipipanone.
(cc) Ethylmethylthiambutene.
(dd) Etonitazene.
(ee) Etoxeridine.
(ff) Fentanyl.
(gg) Furethidine.
(hh) Hydroxypethidine.
(ii) Isoamidone (Isomethadone).
(jj) Isonipecaine (Meperidine).
(kk) Ketobemidone.
(*ll*) Levomethorphan.
(mm) Levomoramide.

(nn) Levophenacylmorphan.
(oo) Levorphanol.
(pp) Metazocine.
(qq) Morpheridine.
(rr) Noracymethadol.
(ss) Norlevorphanol.
(tt) Normethadone.
(uu) Norpipanone.
(vv) Opium.
(ww) Phenadoxone.
(xx) Phenampromide.
(yy) Phenazocine.
(zz) Phenomorphan.
(aaa) Phenoperidine.
(bbb) Piminodine.
(ccc) Piritramide.
(ddd) Proheptazine.
(eee) Properidine.
(fff) Propiram.
(ggg) Racemethorphan.
(hhh) Racemoramide.
(iii) Racemorphan.
(jjj) Trimeperidine.

17. "Opium" means any compound, manufacture, salt, isomer, salt of isomer, derivative, mixture or preparation of the following, but does not include apomorphine or any of its salts:

(a) Acetorphine.
(b) Acetyldihydrocodeine.
(c) Benzylmorphine.
(d) Codeine.
(e) Codeine methylbromide.
(f) Codeine-n-oxide.
(g) Cyprenorphine.
(h) Desomorphine.
(i) Dihydromorphine.
(j) Drotebanol.
(k) Ethylmorphine.
(l) Etorphine.
(m) Heroin.
(n) Hydrocodone.
(o) Hydromorphinol.
(p) Hydromorphone.
(q) Methyldesorphine.
(r) Methyldihydromorphine.
(s) Metopon.
(t) Morphine.
(u) Morphine methylbromide.
(v) Morphine methylsulfonate.
(w) Morphine-n-oxide.
(x) Myrophine.

(y) Nicocodeine.

(z) Nicomorphine.

(aa) Normorphine.

(bb) Oxycodone.

(cc) Oxymorphone.

(dd) Pholcodine.

(ee) Thebacon.

(ff) Thebaine.

18. "Peyote" means any part of a plant of the genus lophophora, known as the mescal button.

19. "Pharmacy" means a licensed business where drugs are compounded or dispensed by a licensed pharmacist.

20. "Practitioner" means a licensed physician, pharmacist, osteopath, dentist, veterinarian or other person licensed to prescribe and administer drugs.

21. "Prescription-only drug" does not include a dangerous drug or narcotic drug but means:

(a) Any drug which because of its toxicity or other potentiality for harmful effect, or the method of its use, or the collateral measures necessary to its use, is not generally recognized among experts, qualified by scientific training and experience to evaluate its safety and efficacy, as safe for use except by or under the supervision of a medical practitioner.

(b) Any drug that is limited by an approved new drug application under the federal act or § 32-1962 to use under the supervision of a medical practitioner.

(c) Every potentially harmful drug, the labeling of which does not bear or contain full and adequate directions for use by the consumer.

(d) Any drug required by the federal act to bear on its label the legend "caution: federal law prohibits dispensing without prescription".

22. "Produce" means grow, plant, cultivate, harvest, dry, process or prepare for sale.

23. "Sale" or "sell" means an exchange for anything of value.

24. "Scientific purpose" means research, teaching or chemical analysis.

25. "Transfer" means furnish, deliver, give away or administer.

26. "Vapor-releasing substance containing a toxic substance" means paint or varnish dispensed by the use of aerosol spray, or any glue, which releases vapors or fumes containing acetone, volatile acetates, benzene, butyl alcohol, ethyl alcohol, ethylene dichloride, isopropyl alcohol, methyl alcohol, methyl ethyl ketone, pentachlorophenol, petroleum ether, toluene, volatile ketones, isophorone, chloroform, methylene chloride, mesityl oxide, xylene, cumene, ethylbenzene, trichloroethylene, mibk, miak, mek or diacetone alcohol.

27. "Wholesaler" means a person who in the usual course of business lawfully supplies narcotic or dangerous drugs that he himself has not produced or prepared, but not on prescriptions.

§ 13-3402. Possession and sale of peyote; classification

A. A person who knowingly possesses, sells, transfers or offers to sell or transfer peyote is guilty of a class 6 felony.

B. In a prosecution for violation of this section, it is a defense that the peyote is being used or is intended for use:

1. In connection with the bona fide practice of a religious belief, and

2. As an integral part of a religious exercise, and

3. In a manner not dangerous to public health, safety or morals.

§ 13–3403. Possession and sale of a vapor-releasing substance containing a toxic substance; regulation of sale; exceptions; classification

A. A person shall not knowingly:

1. Breathe, inhale or drink a vapor-releasing substance containing a toxic substance.

2. Sell, transfer or offer to sell or transfer a vapor-releasing substance containing a toxic substance to a person under eighteen years of age.

3. Sell, transfer or offer to sell or transfer a vapor-releasing substance containing a toxic substance if such person is not, at the time of sale, transfer or offer, employed by or engaged in operating a licensed commercial establishment at a fixed location regularly offering such substance for sale and such sale, transfer or offer is made in the course of employment or operation.

B. A person making a sale or transfer of a vapor-releasing glue containing a toxic substance shall require identification of the purchaser and shall record:

1. The name of the glue.

2. The date and hour of delivery.

3. The intended use of the glue.

4. The signature and address of the purchaser.

5. The signature of the seller or deliverer.

Such record shall be kept for three years and be available to board inspectors and peace officers.

C. The operator of a commercial establishment shall keep all vapor-releasing glue containing a toxic substance in a place that is unavailable to customers without the assistance of the operator or an employee of the establishment.

D. The operator of a commercial establishment selling vapor-releasing paints and varnishes containing a toxic substance dispensed by the use of any aerosol spray device shall conspicuously display an easily legible sign of not less than eleven by fourteen inches which states: "warning: inhalation of vapors can be dangerous".

E. This section is not applicable to the transfer of a vapor-releasing substance containing a toxic substance from a parent or guardian to his child or ward, or the sale or transfer made for manufacturing or industrial purposes.

F. A person who violates any provision of this section is guilty of a class 5 felony, but the court may, having regard to the nature and circumstances of the offense, enter judgment of conviction for a class 1 misdemeanor and make disposition accordingly.

§ 13–3404. Possession and sale of dangerous drugs and prescription-only drugs; classification

A. A person shall not knowingly:

1. Possess a dangerous drug, possess a prescription-only drug or possess equipment together with the necessary chemicals for the manufacture of a dangerous drug or a prescription-only drug.

2. Possess a dangerous drug or a prescription-only drug for sale.

3. Sell, transfer or offer to sell or transfer a dangerous drug, any material, compound or preparation containing any quantity of a dangerous drug or a prescription-only drug.

4. Obtain or attempt to obtain a dangerous drug or prescription-only drug or procure or attempt to procure the administration of a dangerous drug or prescription-only drug by fraud, deceit, misrepresentation or subterfuge.

B. A person who violates:

1. Subsection A, paragraph 2 or 3 relating to dangerous drugs is guilty of a class 2 felony.

2. Subsection A, paragraph 1 or 4 relating to dangerous drugs is guilty of a class 4 felony, but the court may, having regard to the nature and circumstances of the offense, enter judgment of conviction for a class 1 misdemeanor and make disposition accordingly.

3. Subsection A, paragraph 5 or any provision of this section relating to prescription-only drugs is guilty of a class 2 misdemeanor.

§ 13–3405. Possession and sale of marijuana; inducing minor to traffic in or use marijuana; classification

A. A person shall not knowingly:

1. Possess or produce marijuana.

2. Possess marijuana for sale.

3. Transport, import into this state, sell, transfer or offer to transport, import into this state, sell or transfer marijuana.

B. A person eighteen years of age or older shall not knowingly:

1. Hire, employ or use a minor to transport, import into this state, sell or transfer marijuana.

2. Sell, transfer or offer to sell or transfer marijuana to a minor.

3. Induce a minor to use marijuana.

C. A person who violates:

1. Subsection A, paragraph 1 is guilty of a class 6 felony.

2. Subsection A, paragraph 2 is guilty of a class 4 felony.

3. Subsection A, paragraph 3 or subsection B is guilty of a class 2 felony.

§ 13–3406. Possession and sale of narcotic drugs; inducing minor to traffic in or use narcotic drugs; classification

A. A person shall not knowingly:

1. Possess a narcotic drug.

2. Possess a narcotic drug for sale.

3. Transport, import into this state, sell, transfer or offer to transport, import into this state, sell or transfer a narcotic drug.

4. Obtain or attempt to obtain a narcotic drug or procure or attempt to procure the administration of a narcotic drug by fraud, deceit, misrepresentation or subterfuge.

5. Hire, employ or use a minor to transport, import into this state, prepare for sale, sell or transfer a narcotic drug.

6. Sell, transfer or offer to sell or transfer a narcotic drug to a minor.

7. Induce a minor to use a narcotic drug.

B. A person who violates:

1. Subsection A, paragraph 1 or 4 is guilty of a class 4 felony.

2. Subsection A, paragraph 2 or 3 is guilty of a class 2 felony and is not eligible for probation, pardon, parole, commutation or suspension of sentence or release on any other basis until such person has served not less than two-thirds of the sentence imposed by the court but in any event not less than five years, notwithstanding §§ 41–1604.06 and 41–1604.07. Any person convicted of a violation of such offense involving an amount of one or more drugs having a value of not more than two hundred fifty dollars and who was not previously convicted of any felony is eligible for supervised probation and upon sentence to probation shall be committed to the department of corrections for not less than thirty nor more than sixty days.

3. Subsection A, paragraph 5, 6 or 7, if under eighteen years of age and tried as an adult is guilty of a class 2 felony and if eighteen years of age or older is guilty of a

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BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS

In the Matter of BRANDY WILLIAMS, ARIZONA MOTHERS ADVOCATING MEDICAL MARIJUANA FOR AUTISM AND JACK WILBORN AND JANA WILBORN Appellants.	Case No. 2018-MMR-0098-DHS **THE DEPARTMENT'S RESPONSE TO APPELLANTS' CLOSING MEMORANDUM** (Assigned to Hon. Velva Moses-Thompson) **Hearing Dates: May 8 & 9, 2018** **June 20, 2018**

The purpose of the Arizona Medical Marijuana Act ("AMMA") was to make "the use of marijuana lawful for medicinal purposes under the terms and conditions set forth in that Act." *State v. Sisco*, 239 Ariz. 532, 536, ¶ 14, 373 P.3d 549, 553 (2016). AMMA lists certain specific medical conditions as debilitating ("DMC's"). A.R.S. § 36-2801(3)(a) & (b). The Arizona Department of Health Services ("Department") was authorized to develop a rule for adding others. A.R.S. § 36-2801.01. The Department did so in 2011. *See* A.A.C. § R9-17-106 (the "Rule"). The Rule has at all times been followed, and the Department's actions thereunder have been upheld by the courts. *See, e.g., Ariz. Cannabis Nurses Ass'n v. Ariz. Dep't of Health Servs.*, 242 Ariz. 62, 392 P.3d 506 (App. 2017). The Department's actions at issue here also were consistent with the Rule and should be affirmed.

I. Voter intent requires the Department's DMC approval process.

AMMA does not specify how the Department should process petitions to add DMC's or what evidence should be considered. Those issues were left up to the

discretion by not approving the Petition. Yet they did not even offer the Petition (with its exhibits) in evidence. *See* Appellants' Exhibit 1. The Petition and its twenty-four tabbed exhibits were marked as the Department's Exhibits 14 and 15.[6] Much of the evidence offered at the hearing by Appellants was not included in the Petition, was irrelevant, or had nothing to do with the Department's decision. The Department was not presented with Appellants' Exhibits 3-20, or 27-33 until they were marked and produced for the hearing. Declarations, articles, or other statements of the facts to which they testified at the hearing were presented in the Petition for only two of Appellants' several witnesses.

Following the PTSD petitioner's formula, Appellants ask the Court to make a decision based on all of their evidence, whether included in the Petition or not. That is not the issue here. AMMA does not call for a process whereby new DMC's are added if an administrative law judge, upon hearing evidence presented for the first time, decides to add the proposed condition. The notice of hearing correctly identified the issue: "[T]o consider the appeal of the Department's October 27, 2017, decision to deny the Appellant's Petition to add Autism Spectrum Disorder (ASD) to the list of medical marijuana debilitating medical conditions. . . ." Department's Exhibits, Volume One, Exhibit 11, page 1. The issue is whether the Department's decision was arbitrary, capricious, or an abuse of discretion. It was not. It was consistent with AMMA and the Rule and should be affirmed.

VI. The Department may not approve any use of marijuana extracts.

Following the last day of hearing in this matter, the Arizona Court of Appeals issued an Opinion in *State v. Jones*, 1 CA-CR 16-0703, __ Ariz. __, __ P.3d __, 2018 WL 3121440 (App. June 26, 2018) (copy attached as **Exhibit B**). *Jones* was an appeal in a criminal case by a medical marijuana cardholder, with an apparently properly qualifying DMC, who was convicted of possession of hashish, made from the resin extracted from the marijuana plant. The case did not involve a petition to approve a new DMC and

[6] The Department could have elected not to do this and then argued now that Appellants, with the burden of proof, had failed to sustain it. The Department thought it best that the Court know exactly what the Department had considered in making its decision.

obviously could not have been considered by the Department as a reason for denying the Petition on October 27, 2017. *Jones* is, however, a new reason why any further consideration of the Petition by the Department would be futile and probably illegal under state and federal law.

The following language from the *Jones* Opinion explains why:

> The State argues that by not specifically including extracted resin within its description of immunized marijuana, AMMA adopts the "preexisting law distinguishing between cannabis and marijuana." We agree. . . . .
>
> According to our supreme court, hashish is "'the resin extracted' from the marijuana plant," criminalized as cannabis, a narcotic drug, and distinct from marijuana. [*State v.*] *Bollander*, 110 Ariz. [84] at 87, 515 P.2d [329] at 332 [(1973)]. "[T]he legislature has recognized hashish and marijuana as two distinct forms of cannabis.... but marijuana alone has been singled out for separate treatment under our statutes." *Id*. We have held that our legislature's differing treatment of hashish and marijuana is to be attributed to the great potency of the former, rendering it "susceptible to serious and extensive abuse." *State v. Floyd*, 120 Ariz. 358, 360, 586 P.2d 203, 205 (App. 1978).
>
> AMMA is silent as to hashish. Prior understanding of the pertinent words strongly indicates that AMMA in no way immunizes the possession or use of hashish.
>
> That AMMA immunizes medical use of a mixture or preparation of the marijuana plant does not immunize hashish. "Mixture or preparation" means the combining of marijuana with non-marijuana elements to make "consumables" such as brownies and the like. A.R.S. § 36–2801(15). Hashish, by contrast, is processed from the separated or extracted resin.

Jones, __ Ariz. __, __ P.3d __, 2018 WL 3121440 at *3, ¶¶ 9-12 (App. June 26, 2018).

The Department does not recall any evidence being offered by the Appellants that they were using "marijuana" to treat their ASD children for seizures. Someone said: "I am not going to have my child smoke it." And it was clear from the evidence that the intent was to take the resin separated or extracted from the marijuana plant and use it as medicine. No one said they would use "hashish." Rather, as Brandy Williams and others described, they further process the resin into tinctures, oils, and other products, which are then used as medicine. Dr. Bogner opined that **only** extracts such as these should be used

to treat ASD. Under *Jones*, effective as of June 26, 2018, the resin separated or extracted from the marijuana plant is not "medical marijuana." It is cannabis, a narcotic drug, whose possession and use are illegal. For this reason, further consideration of the Petition would be futile because the Department cannot add ASD when the only evidence offered involves the use of "cannabis," a narcotic drug not protected under AMMA.

VII. Conclusion.

Appellants filed a Petition to add a new DMC. The Petition was woefully defective. It defined a patient population of approximately 43,000 Arizona children and admittedly included many who are not severely impaired.

Even for the ASD patients who are impaired, the Petition included no evidence of articles published in peer-reviewed scientific journals reporting the results of research on the effects of marijuana on ASD supporting why ASD should be added. The evidence at the hearing involved only the use of oils, tinctures, and other extracts. Based on *Jones*, we now know that a petition proposing to use anything other than "marijuana" must be denied as illegal. And a Petition which does not prove marijuana usage provides a therapeutic or palliative benefit must be denied.

The Department followed the rule of law and did its job. It denied a petition that, on its face, was insufficient and defective. The Department's decision was not arbitrary, capricious, or an abuse of discretion.

There is no *res judicata* effect applicable to Petitions. If one is denied, either before or after a hearing, the petitioners are not precluded from filing another one six months later, and yet another six months after that. This Court should recommend that the Department's decision denying the Petition be affirmed. If all of the evidence Appellants presented at the hearing is enough, they may file another petition, properly attaching such evidence as required. The correct process requires giving all of the evidence to the Department. That process should have been, but was not, followed here. The Department's decision should stand.

Declaration of William Troutt, NMD

1. I, William Troutt, do hereby swear that: I am over the age of 18 and am a resident of the State of Arizona and the County of Pinal. I have personal knowledge of the facts herein, and, if called as a witness, could testify completely thereto.

2. I declare under penalty of perjury that, to the best of my knowledge and belief, the information herein is true and correct.

3. My name is William Troutt. I was born, raised and educated in the State of Arizona. I received a Bachelor of Science degree in biology and graduated Magna Cum Laude from Arizona State University in 1999. I graduated from Southwest College of Naturopathic Medicine in 2003 and was licensed to practice medicine in the State of Arizona in 2004.

4. Naturopathic Physicians are the only primary care physicians trained in the preparation of, and treatment with, medications prepared from raw botanicals. This training specifically includes the extraction of medicinal constituents from botanical plant medicines, which is standard practice in botanical medicine today.

5. In addition to my naturopathic studies, I have developed expertise and specialization in medical cannabis. I have been studying the historic and scientific literature on medical cannabis for the last two decades. During the last three years, marked by the passage of the Arizona Medical Marijuana Act (AMMA), I have exclusively worked in the field of medical cannabis. I have consulted with and learned from hundreds of medical cannabis patients, top physicians and researchers in the field, and public servants and industry leaders.

6. After the AMMA passed in November 2010, I preformed medical evaluations for patients who were interested in using medical cannabis, and I completed certifications for patients who qualified under the AMMA. I focused these evaluations on counseling patients about the benefits and risks of using medical cannabis as well as dosage and methods of administration.

7. In December 2012, I became the medical director for the first state-licensed medical cannabis dispensary in Arizona. As part of my duties, outlined by the Arizona Department of Health Services, I generate educational materials for dispensary patients and training materials for dispensary agents including dosage and methods of administration. I have acted as a consultant for other dispensary medical directors as well as physicians who recommend medical cannabis to their patients.

8. An extraction generally refers to a method by which certain constituents are removed from a plant. Cannabinoids, as well as other medicinal constituents, are extracted from cannabis.

9. There are many ways that different parts of the plant can be removed. Historically, people have used relatively simple ways to isolate parts of the plant for different preparations, including edible preparations. Cannabis preparations that are consumed as food or drink typically involve cannabis extracts rather than just plant material.

10. As medical cannabis producers have become more sophisticated, the extraction methodology they use to create edible preparations has also become more sophisticated. Many edible preparation producers now utilize extraction technology developed for large-scale food preparation.

11. Extractions are important for patients because they enable medical cannabis producers to create products that are tailored to different types of patients' specific needs. By using extraction methods, a manufacturer can isolate the particular parts of the plant that the manufacturer wants to use, test it for proper and precise dosing, and provide different types of patients with medicine specifically designed for their condition. Extractions also increase the delivery options for patients so that they neither have to inhale cannabis nor eat bulky and fibrous dried plant material to get the medicine they need. Indeed, patients suffering from the advanced stage of amyotrophic lateral sclerosis, also known as ALS or Lou Gehrig's Disease, have great difficulty breathing and swallowing. For these patients, eating raw plant material, or smoking and/or inhaling medical marijuana, is physically impossible. These patients can, however, consume an extract from medical marijuana.

12. By contrast, simply testing raw plant material as opposed to extracting parts of the plant does not provide patients with as accurate a picture of the actual cannabinoid constituents in their medicine, and does not provide patients with medicine specifically tailored to their needs. Flowers from the same plant test differently. Multiple tests can provide an average, but each dose of plant material will vary.

13. Patients who are limited to edible or drinkable cannabis preparations made from un-manipulated plant material have fewer, less precise, and less palatable options available to them than patients who have access to edible or drinkable cannabis preparations made using extracts from plant material.

14. Published medical studies dating back to the 1950s demonstrate that cannabinoids have anti-seizure effects. Many of these studies note common knowledge and anecdotal reports about the cannabis plant effectively treating

seizure disorders since antiquity. The majority of cannabis studies that show benefits for patients with seizure disorders focus on the cannabinoid cannabidiol (CBD). However, there are also studies showing anti-seizure activity with the cannabinoid tetrahydrocannabinol (THC) as well as other cannabinoids.

15. A safe and effective dosage of CBD has been validated through many human and animal studies. This dosage is referred to as a safe therapeutic dosage range. To obtain a therapeutic dosage of the CBD, THC must only be present in a small quantity to avoid any side effects associated with the euphoria or sedation that is caused by a high dose THC. Cannabis strains above 20:1 CBD to THC have been identified that allow for a therapeutic dose of CBD to be achieved without any of the side effects that may be associated with large doses of THC. Since the passage of medical cannabis laws in many states, physicians and parents have reported that extracts from these 20:1 and above ratio strains have effectively controlled seizure disorders in children.

16. The last two decades of medical research has identified an endocannabinoid system in most living organisms that is stimulated by cannabis. This research has shown that stimulating the endocannabinoid system has a fundamental role in balancing the human nervous and immune systems. This understanding brings clarity to the physiological explanation of how cannabis can subdue a hyperactive or erratic nervous system that is associated with many seizure disorders.

17. If a seizure patient cannot access cannabis that has a minimum of a 20:1 CBD to THC ratio, I would recommend using cannabis with a lower ratio and supplementing it with an extract typically called CBD oil. The CBD oil has no measurable THC, but is high in CBD. CBD oil contains high levels of cannabidiol but does not contain many of the other cannabinoids found in the cannabis plant.

The purpose of this recommendation is to come as close as possible to matching the known therapeutic dose of CBD as well as reports of what other children with seizure disorders are currently using to get the best results.

18. Medical cannabis patients tend to experience better results from extractions that come from the cannabis plant and contain some or all of the naturally occurring cannabinoids than from CBD oil, which contains a far less robust cannabinoid profile.

19. I was introduced to the Welton family in the context of my work as a medical director for a dispensary. I spoke with Jennifer and Jacob Welton about the benefits and risks associated with the medical cannabis dosages that are appropriate for a patient like Zander. I have also consulted with a physician who recommended and certified Zander as having a qualifying medical condition under the AMMA. I am consulting with the Weltons and this physician on a regular basis to provide educational guidance for safe and effective dosing for Zander.

Executed this 7th day of November 2013.

William D. Troutt NMD.

William Troutt, NMD

Michael K. Jeanes, Clerk of Court
*** Electronically Filed ***
03/24/2014 8:00 AM

SUPERIOR COURT OF ARIZONA
MARICOPA COUNTY

CV 2013-014852 03/21/2014

HONORABLE KATHERINE COOPER

CLERK OF THE COURT
D. Harding
Deputy

JACOB WELTON, et al. DANIEL J POCHODA

v.

STATE OF ARIZONA, et al.

J KENNETH MANGUM
JOSEPH N ROTH

MINUTE ENTRY

The Court has reviewed the following:

- Plaintiffs' Motion for Preliminary Injunction, filed November 13, 2013;
- Defendant William Montgomery's Response to Plaintiffs' Motion for Preliminary Injunction and Motion for Judgment on the Pleadings per Ariz. R. Civ. P. 12(C), filed December 2, 2013;
- Plaintiffs' Response to Defendant Montgomery's Motion for Judgment on the Pleadings and Reply in Support of Plaintiffs' Application for Preliminary Injunction, filed January 7, 2014; and
- Defendant William Montgomery's Reply in Support of Motion for Judgment on the Pleadings per Ariz. R. Civ. P. 12(C), filed January 28, 2014.

On February 14, 2014, the Court heard oral argument and took under advisement Plaintiffs' claim for declaratory judgment.[1] The issue is one of statutory interpretation: Does Arizona's Medical Marijuana Act ("AMMA") allow medical marijuana to be consumed in extract form? As set forth below, the Court concludes it does and that Plaintiffs are entitled to an

[1] The Court denied Defendant's Motion for Judgment on the Pleadings on February 14, 2014.

order that decriminalization of marijuana for medicinal purposes includes extracts adapted from marijuana.

Having reached this conclusion, the Court believes that Plaintiffs' request for injunctive relief is moot. Pursuant to the Court's declaratory judgment in favor of Plaintiffs, they are now protected from arrest and prosecution for giving their son, Zander, CBD oil, a marijuana extract. Unless Plaintiffs have a basis for fearing that Defendant Montgomery may prosecute them regardless of the Court's ruling, an injunction against Defendant is not warranted.

Declaratory Judgment Action

Plaintiffs seek an order pursuant to Arizona's Declaratory Judgment Act, A.R.S. § 12-1832. The Act provides that" [a]ny person...whose rights, status or other legal relations are affected by a statute...may have determined any question of construction or validity arising under the [statute] and obtain a declaration of rights, status or other legal relations thereunder." It is a remedial statute intended to "settle and to afford relief from uncertainty and insecurity with respect to rights, status and other legal relations." *Planned Parenthood Ctr. of Tucson, Inc. v. Marks*, 17 Ariz. App. 308, 310, 497 P.2d 534, 536 (1972). Declaratory judgment must be based on an actual controversy. *Id.*

A real, justiciable controversy requiring clarity exists here. Plaintiff's Complaint and Application for Preliminary Injunction present a prima facie case for the medical treatment of nine-year-old Zander with medical marijuana administered in a form of plant material combined with extracted CBD in oil form. The State contends that the AMMA did not decriminalize plant extracts which, therefore, are still unlawful under state law.

The controversy is ripe. The law does not require Plaintiffs to be arrested and to face criminal prosecution to obtain declaratory relief. *Planned Parenthood,* 17 Ariz. App. at 312, 497 P.2d at 538 ("To require statutory violation and exposure to grave legal sanctions; to force parties down the prosecution path, in effect compelling them to pull the trigger to discover if the gun is loaded, divests them of the forewarning which the law, through the Uniform Declaratory Judgments Act, has promised.") Whether or not the County Attorney intends to prosecute Plaintiffs is not the issue. Plaintiffs are entitled to a determination of their rights under the AMMA.

Statutory Interpretation

In interpreting a voter initiative, the court's "'primary purpose is to effectuate the intent of those who framed it and the electorate that adopted it.'" *State ex rel. Montgomery v. Woodburn ex rel. County of Maricopa*, 231 Ariz. 215, 216, 292 P.3d 201, 202 (App. 2012)

(citations omitted). The court first considers the statutory language, "the best and most reliable index of a statute's meaning." *Janson v. Christensen,* 167 Ariz. 470, 471, 808 P.2d 1222, 1223 (1991); *see also Zamora v. Reinstein,* 185 Ariz. 272, 275, 915 P.2d 1227, 1230 (1996). "[W]here the language is plain and unambiguous, courts generally must follow the text as written." *Canon Sch. Dist. No. 50 v. W.E.S. Constr. Co.,* 177 Ariz. 526, 529, 869 P.2d 500, 503 (1994). Courts give effect to each word or phrase and apply the "usual and commonly understood meaning." *Bilke v. State,* 206 Ariz. 462, 464–65, 80 P.3d 269, 271–72 (2003). Unless clear indication of legislative intent to the contrary exists, courts do not "construe the words of a statute to mean something other than what they plainly state." *Canon Sch. Dist. No. 50,* 177 Ariz. at 529, 869 P.2d at 503.

The AMMA

In November, 2010, Arizona voters passed the AMMA for "the purpose of . . . protect[ing] patients with debilitating medical conditions, as well as their physicians and providers, from arrest and prosecution, criminal and other penalties and property forfeiture if such patients engage in the medical use of marijuana." Prop. 203 § 2(G) (codified at A.R.S. § 36-2801 et seq.). The AMMA decriminalizes, under state law, certain activities associated with the medical use of marijuana for patients and caregivers to whom ADHS has issued identification cards. It also decriminalizes activities associated with cultivating, packaging, and selling medical marijuana for individuals to whom ADHS has issued appropriate licenses. *Id.*

The AMMA defines "marijuana" as "all parts of any plant of the genus cannabis whether growing or not, and the seeds of such plant." A.R.S. § 36-2801(8). It defines "'[u]sable marijuana" as "the dried flowers of the marijuana plant, *and any mixture or preparation thereof,* but does not include the seeds, stalks and roots of the plant and does not include the weight of any non-marijuana ingredients combined with marijuana and prepared for consumption as food or drink." A.R.S. § 36-2801(15). (Emphasis added.)

In applying the plain language of the statute to the rules of statutory interpretation, the Court concludes that nothing in the statute limits the form in which patients may use medical marijuana. The AMMA applies equally to the plant and to CBD oil.

First, the definition of "usable marijuana" does not limit the medicine to just the dried flowers. It includes "any mixture or preparation" of the dried flowers of the marijuana plant. The plain and ordinary meaning of the AMMA's text is reflected in the Merriam-Webster Dictionary definitions of these words:

- "Usable" is defined as "a convenient or practicable use." http://www.merriam-webster.com/dictionary/usable.

- "Any" is all-inclusive and defined as "every; one, some, or all of indiscriminate quantity." http://www.merriam-webster.com/dictionary/any.
- "Mixture" is the "combination of different things." http://www.merriam-webster.com/dictionary/mixture.
- Importantly in this case, "preparation" means "the activity or process of making something ready or to become ready for something;" http://www.merriam-webster.com/dictionary/preparation; "[t]hat which is prepared, made, or compounded by a certain process or for a particular purpose; a combination" including "a medicinal substance made ready for use." http://www.webster-dictionary.net/definition/ preparation.
- "Prepared" is to be "made fit or suitable; adapted." http://www.webster-dictonary.net.definition/Prepared.

The effect of these words is to allow patients to employ "certain process[es]" to "adapt[]" marijuana "for a particular purpose" and a "convenient and practicable use."

Second, the drafters included the phrase "and any mixture or preparation thereof." These words expand the allowable manipulation of the plant. To conclude that patients can only use unmanipulated plant material would render the phrase meaningless. Basic statutory interpretation prohibits such a result. Each word and phrase is given meaning. *Bilke, supra. See Williams v. Thude,* 188 Ariz. 257, 259, 934 P.2d 1349, 1351 (1997) (when interpreting a statute, a court presumes the legislature intended each word and clause to have meaning). Had the drafters wanted to limit legal use to the plant form only, they did not need this phrase and would have omitted it.

Third, the statute provides that medical marijuana can be prepared "for consumption as food or drink." Marijuana preparations that are consumed as food or drink may involve marijuana extracts. Ex. 2 to Plaintiffs' Application, ¶ 9. An extract is a method of removing material from the plan, usually cannabinoids. Extractions facilitate proper dosing and, in some cases, make it feasible for patients who cannot consume the medicine in plant form to receive it another way. *Id.* at 11. Again, the statute itself contemplates patients preparing marijuana in a manner, including extract form to meet their medical needs.

Defendant Montgomery acknowledges that the AMMA means that "flowers can be crushed or ground up and added to other foods to be consumed" (Response, p. 9). However, he contends that there is a "prohibition on concentrating the chemicals in the marijuana flower" in the AMMA. (Response, p. 10.) Where? The Court finds no such "prohibition" in the statute.

Montgomery further contends that the AMMA does not permit extracts because "any mixture or preparation thereof" simply means that plant material may be mixed with food. As

Plaintiffs' Reply states, this argument collapses "mixture" with "preparation" into a single definition, i.e., mixed with food. With this view, the meaning of the word "preparation" disappears. That is not what the statute says. It broadly states "mixture or preparation," not "mixture or preparation as long as it remains in plant form and then only when mixed with food." "Mixture" is separate and distinct from "preparation." The drafters included both terms. Statutory construction requires that the Court construe the law as it is written: "usable marijuana" includes "any mixture or preparation" made from the dried plant flowers. A.R.S. § 36-2801(15).

Protective Purpose

It is undisputed that medical marijuana is intended to be used by patients to treat chronic, debilitating, and/or painful conditions. The statute identifies them: cancer, glaucoma, positive status for human immuno-deficiency virus, acquired immune deficiency syndrome, hepatitis C, amyotrophic lateral sclerosis (ALS), Crohn's disease, agitation of Alzheimer's disease, and chronic or debilitating medical conditions or treatments that produce cachexia or wasting syndrome, severe and chronic pain, severe nausea, seizures, including those characteristic of epilepsy, or severe and persistent muscle spasms, including those characteristic of multiple sclerosis. A.R.S. § 36-2801(3).

It makes no sense to interpret the AMMA as allowing people with these conditions to use medical marijuana but only if they take it in one particular form. Such an interpretation reduces, if not eliminates, medical marijuana as a treatment option for those who cannot take it in plant form, or who could receive a greater benefit from an alternative form.

Constraining patients' medical marijuana options contradicts the stated purpose of the AMMA -- to "protect patients with debilitating medical conditions . . . from arrest and prosecution, criminal and other penalties and property forfeiture if such patients engage in the medical use of marijuana." Prop. 203 § 2(G).

Proponents' and Voters' Intent

A statutory interpretation permitting the use of extracts is consistent with voters' intent in enacting the AMMA. Ballot materials demonstrate that proponents and voters did not intend patients to be prosecuted for using medical marijuana in the form that is the most beneficial to them. For example:

- The Descriptive Title voters read before casting their vote on the AMMA stated that the law "allows the use of marijuana for people with debilitating medical conditions who obtain a written certification from a physician and [it] establishes

a regulatory system governed by the Arizona Department of Health Services for establishing and licensing medical marijuana dispensaries."

- The November 2, 2010 ballot further stated that "[a] 'yes' vote shall have the effect of authorizing the use of marijuana for people with debilitating medical conditions who obtain a written certifications from a physician and [of] establishing a regulatory system governed by the Arizona Department of Health Services for establishing and licensing medical marijuana dispensaries. A 'no' vote shall have the effect of retaining current law regarding the use of marijuana."

Nothing in these materials suggests that patients should or would be limited to using un-manipulated plant material for their medical needs.

Conclusion

Defendant Montgomery's concern that an order in this case will impact his ability to prosecute people for using other types of extracts is irrelevant. The Court is solely concerned with the interpretation of the AMMA as written. The language of the AMMA and its ballot materials make clear that proponents and votes intended the AMMA to provide access to medicine for debilitating medical conditions without fear of criminal prosecution. The AMMA does not limit the form in which that medicine can be administered. Nor does it prohibit the use of extracts, such as CBD oil.

Accordingly,

IT IS HEREBY ORDERED that the AMMA authorizes qualifying patients to use extracts, including CBD oil, prepared from the marijuana plant.

IT IS FURTHER ORDERED vacating the evidentiary hearing on Plaintiffs' Application for Preliminary Injunction on April 21, 2014. As stated above, this Declaratory Judgment Order means that Plaintiffs may treat Zander with medical marijuana in extract form and are entitled to the same protections under the AMMA that other medical marijuana patients enjoy. An injunction precluding prosecution is no longer warranted absent a showing that Defendant may attempt to prosecute in spite of this ruling.

The Court did receive Plaintiffs' request for a telephonic conference to address the April 21, 2014 hearing. In view of the foregoing, the Court declines to set a status conference at this time.

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