

**IN THE SUPREME COURT OF CALIFORNIA**

THE PEOPLE,	)	
	)	
Plaintiff and Respondent,	)	
	)	S198434
v.	)	
	)	Ct.App. 2/4 B229615
ZACHARY EDWARD DAVIS,	)	
	)	Los Angeles County
Defendant and Appellant.	)	Super. Ct. No. BA367204
_____	)	

The question presented here is the sufficiency of the evidence to prove a given material is a controlled substance regulated by the Health and Safety Code. Specifically, may a jury properly infer that 3,4-methylenedioxymethamphetamine (MDMA) is controlled based solely on its chemical name, when that substance is not listed in the code? We conclude that evidence of MDMA’s chemical name, standing alone, is insufficient to prove the material is a controlled substance.

**I. BACKGROUND**

At a rave party in Los Angeles on December 31, 2009, defendant Zachary Edward Davis sold undercover police officer Romeo Rubalcava two blue pills for \$20. Defendant was arrested along with a second man he consulted during the transaction. As officers approached, the second man discarded a clear plastic bag containing 19 additional blue pills. Defendant was charged with sale and

possession for sale of a controlled substance. (Health & Saf. Code, §§ 11379, subd. (a), 11378.)<sup>1</sup>

At trial, a criminalist testified that he tested the two pills defendant sold and a representative sample of the 19 discarded pills. The two pills and the sample contained “M.D.M.A. or Ecstasy.” The criminalist did not elaborate on the chemical composition of the drug. His lab report, which was admitted in evidence, identified the pills as 3,4-methylenedioxymethamphetamine. Officer Rubalcava described Ecstasy as a party drug, the effects of which can last up to 24 hours. He did not further explain its effects on the user. In closing, the prosecutor argued that the jury had to find the substance defendant possessed and sold was “Ecstasy.” The jury instructions and verdict forms on both counts referred to the controlled substance at issue as “Methylenedioxymethamphetamine” and “Ecstasy.”

The jury convicted defendant of sale and simple possession of a controlled substance (§ 11377). The trial court ordered that defendant serve 90 days in the county jail as a condition of three years’ probation.

The Court of Appeal affirmed the judgment. It held that sufficient evidence supported defendant’s convictions even though there was “neither a stipulation nor expert testimony showing that MDMA meets the definition of a controlled substance or controlled substance analog.” It took judicial notice of scientific treatises to draw conclusions about MDMA’s chemical composition and its relationship to methamphetamine. It further reasoned as a matter of “common sense” that MDMA’s chemical name, which includes the term “ ‘methamphetamine’ ” and does “not includ[e] any suffix or term negating the

---

<sup>1</sup> Subsequent undesignated statutory references are to the Health and Safety Code.

inference (e.g., ‘pseudo’),” supported the inference that the pills defendant sold to Officer Rubalcava contained some quantity of methamphetamine or amphetamine.<sup>2</sup>

## II. DISCUSSION

“[The] Fifth Amendment right to due process and Sixth Amendment right to jury trial . . . require the prosecution to prove to a jury beyond a reasonable doubt every element of a crime.” (*People v. Sengpadychith* (2001) 26 Cal.4th 316, 324, italics omitted.) “In reviewing a sufficiency of evidence challenge, we view the evidence in the light most favorable to the verdict and determine whether *any* rational trier of fact could have found the essential elements of the crime proven beyond a reasonable doubt.” (*People v. Gonzalez* (2012) 54 Cal.4th 643, 653.)

The Health and Safety Code lists the various substances it controls in five extensive schedules. (§§ 11054-11058.) The listings include “official, common, usual, chemical, [and] trade name[s].” (§ 11053.) The code also regulates “analogs” of listed controlled substances (analogs), as we discuss below.

Defendant was convicted of violating sections 11377 and 11379, subdivision (a), which prohibit the possession and sale, respectively, of various controlled substances identified in the schedules. Section 11055, subdivision (d)(1) lists under Schedule II: “[a]mphetamine, its salts, optical isomers, and salts of its optical isomers.” Subdivision (d)(2) of that section lists “[m]ethamphetamine, its salts, isomers, and salts of its isomers.” Subdivision (d) further provides that “any material, compound, mixture, or preparation” containing

---

<sup>2</sup> The Court of Appeal also considered defendant’s claim that the jury instructions were deficient. We did not grant review on that question. We observe, however, that neither CALCRIM nor CALJIC contains a standard jury instruction defining “controlled substance” and “controlled substance analog” for those substances not enumerated in sections 11054 through 11058. (See e.g., CALCRIM Nos. 2300-2302; CALJIC Nos. 12.00-12.03.)

“any quantity” of any listed substance having a “stimulant effect on the central nervous system,” including amphetamine and methamphetamine, is a controlled substance.

Section 11054 sets out Schedule I substances. It identifies “3,4-methylenedioxy amphetamine” (MDA) as a controlled substance. (§ 11054, subd. (d)(6).) It further defines as a controlled substance “any material, compound, mixture, or preparation” containing “any quantity” of any listed hallucinogenic substances, including MDA, or any “salts, isomers, and salts of isomers” of such substances. (§ 11054, subd. (d).)

In 1988, the Legislature added chapter 6.5 to the code to regulate analogs. (Stats. 1988, ch. 712, § 4, p. 2364.) It found that controlled substance laws were being circumvented by the use of analogs which “have, are represented to have, or are intended to have effects on the central nervous system which are substantially similar to, or greater than, the controlled substances classified in Sections 11054 and 11055 . . . . These analogs present grave dangers to the health and safety of the people of this state. Therefore, it is the intent of the Legislature that a controlled substance analog . . . be considered identical, for purposes of the penalties and punishment . . . to the controlled substance in Section 11054 or 11055 of which it is an analog.” (§ 11400.)

An analog is defined as a substance that: (1) has a substantially similar chemical structure as the controlled substance, or (2) has, is represented as having, or is intended to have a substantially similar or greater stimulant, depressant, or hallucinogenic effect on the central nervous system as the controlled substance. (§ 11401, subd. (b)(1) & (2).)<sup>3</sup>

---

<sup>3</sup> Section 11401, subdivision (c) sets forth exceptions to the general definition.

The Health and Safety Code does not list MDMA, 3,4-methylenedioxymethamphetamine, or Ecstasy as a controlled substance. That substance can nonetheless fall within the statutory scheme if it (1) contains any quantity of a controlled substance such as amphetamine, methamphetamine, or MDA, or (2) meets the definition of an analog. Proof that MDMA qualifies as a controlled substance or analog is an element of the crimes set out in sections 11377 and 11379. (*People v. Becker* (2010) 183 Cal.App.4th 1151, 1155-1156 (*Becker*).)

The Courts of Appeal have upheld convictions for possession or sale of MDMA based on expert testimony regarding the chemical composition and effects of the drug. In *People v. Silver* (1991) 230 Cal.App.3d 389 (*Silver*), the defendant was convicted of possession for sale and sale of MDMA. Two prosecution experts testified that MDMA had a substantially similar chemical structure to methamphetamine, making it an analog. Two defense experts disagreed, testifying that MDMA and methamphetamine were different chemical compounds that had different effects on the user. (*Id.* at pp. 392-393.) The Court of Appeal concluded that the testimony of the prosecution's experts was substantial evidence supporting the jury's verdicts. (*Id.* at p. 396.)

In *Becker, supra*, 183 Cal.App.4th 1151, the defendant was convicted of possessing MDMA. A prosecution investigator testified that MDMA contains methamphetamine and that it has a stimulant effect on the user that causes an increase in heart rate, adrenaline, and excitability. It also has a hallucinogenic effect causing the user to become fascinated with bright lights and loud noise. (*Id.* at pp. 1153-1155.) The Court of Appeal held that, from this testimony, the jury could have reasonably concluded that MDMA either contained methamphetamine or was an analog of that drug. (*Id.* at pp. 1155-1156.)

As *Silver* and *Becker* demonstrate, the jury may find that MDMA is a controlled substance or analog based on *evidence* of MDMA's chemical composition or its effects on the user. Here, as the Court of Appeal recognized, the record contains neither a stipulation nor testimony establishing that MDMA meets the definition of a controlled substance or analog.

Over defendant's objection, the Court of Appeal took judicial notice of several learned treatises.<sup>4</sup> Relying on them, the court concluded that both methamphetamine and MDMA are derivatives of amphetamine and that "[i]n chemistry, a derivative is a compound that may be produced from another compound in one or more steps." The court also referenced treatises to "verif[y] that MDMA's chemical name reflects its component elements, which include methamphetamine and, by extension, amphetamine."

While the Court of Appeal, having referred to outside sources, satisfied itself that the pills in question qualified as a controlled substance, those sources were not before the jury. (See *People v. Peevy* (1998) 17 Cal.4th 1184, 1207.) All the jury had before it was a chemical name not listed in any schedule of the code. An appellate court cannot take judicial notice of additional facts the prosecution failed to prove at trial to affirm a conviction. (*People v. Jackson* (1992) 7 Cal.App.4th 1367, 1373; accord, *United States v. Zepeda* (9th Cir. 2013) 705 F.3d 1052, 1064-1065.) The critical inquiry is whether "the *record* evidence could reasonably support a finding of guilt beyond a reasonable doubt." (*Jackson v. Virginia* (1979) 443 U.S. 307, 318, italics added.)

---

<sup>4</sup> Baer & Holstege, *Encyclopedia of Toxicology* (2d ed. 2005) page 96; Oxford English Dictionary Online (3d ed. 2001) <<http://www.oed.com>> (as of Oct. 26, 2011); Stedman's Medical Dictionary (28th ed. 2006) pages 516, 1164, 1196; Zumdahl, *Chemical Principles* (2d ed. 1995) page 39.

We further reject the reasoning of the Court of Appeal and the Attorney General that the jury could rely on “common sense” or “common knowledge” to infer from its chemical name that MDMA contains some quantity of methamphetamine or amphetamine. “An inference is a deduction of fact that may logically and reasonably be drawn from another fact or group of facts found or otherwise established in the action.” (Evid. Code, § 600, subd. (b).) However, “[a] reasonable inference . . . ‘may not be based on suspicion alone, or on imagination, speculation, supposition, surmise, conjecture, or guess work. [¶] . . . A finding of fact must be an inference drawn from evidence rather than . . . a mere speculation as to probabilities without evidence.’ [Citations.]” (*People v. Morris* (1988) 46 Cal.3d 1, 21, quoting *California Shoppers, Inc. v. Royal Globe Ins. Co.* (1985) 175 Cal.App.3d 1, 45; *Morris* disapproved on another ground in *In re Sassounian* (1995) 9 Cal.4th 535, 543-544, fn. 5.) Here, the evidence to support the critical inference was lacking.

Nor can the missing facts be deemed a matter of common knowledge. “[F]acts are deemed within the common knowledge of the jury only if they are matters of common human experience or well known laws of natural science.” (*People v. Love* (1961) 56 Cal.2d 720, 732, disapproved on another ground in *People v. Morse* (1964) 60 Cal.2d 631, 637, fn. 2, 649.) If the People seek to excuse the production of evidence by urging the fact is one of common knowledge, the following test applies. First, “is the fact one of common, everyday knowledge in that jurisdiction, which everyone of average intelligence and knowledge of things about him can be presumed to know; and [second,] is it certain and indisputable.” (*Varcoe v. Lee* (1919) 180 Cal. 338, 346-347, italics omitted.) “[I]f there is any reasonable question whatever as to either point, proof should be required.” (*Id.* at p. 347.)

The fact that the appellate court and Attorney General rely on a scientific treatise to verify that chemical compound names reflect their composition undermines the conclusion that common knowledge and common sense support the verdict here. Aside from simple and well known binary compounds such as water (H<sub>2</sub>O) and carbon dioxide (CO<sub>2</sub>), we cannot confidently conclude that a lay juror may draw any reliable inferences solely from a chemical name or formula. According to their own source, the naming of chemical compounds involves a multi-step, technical process. (Zumdahl, *Chemical Principles*, *supra*, § 2.9, pp. 39-48; *id.*, §§ 22.1-22.5, pp. 971-1003.) It may be widely accepted within the scientific community, and verifiable by resort to technical reference works, that a chemical name reflects its component elements. Yet many scientifically accepted facts remain far beyond the common knowledge of laypersons. (Cf. *Arais v. Kalensnikoff* (1937) 10 Cal.2d 428, 431; *Melaleuca, Inc. v. Clark* (1998) 66 Cal.App.4th 1344, 1356.) Customarily, such information is presented to the jury through qualified witnesses, subject to cross-examination.

We further note that there appear to be relevant points of debate. First, the Attorney General and the Court of Appeal reach their conclusions based on one chapter from Zumdahl discussing chemical nomenclature and the process of naming simple inorganic binary compounds. (Zumdahl, *Chemical Principles*, *supra*, § 2.9, p. 39.) That chapter, however, does not address the process of naming complex organic compounds such as MDMA. (See *id.*, §§ 22.1-22.5, pp. 971-1003.) Second, defendant challenges the Attorney General's assertion that MDMA "contains" methamphetamine (§ 11055, subd. (d)), arguing instead that a chemical compound is a new chemical substance in which its constituent elements cease to exist as distinct entities. Third, the experts in *Silver* disagreed about whether MDMA has a substantially similar chemical structure or effect to qualify as an analog of methamphetamine. (*Silver*, *supra*, 230 Cal.App.3d at

pp. 392-393.) We need not resolve the accuracy of any of these assertions. We simply observe that none of them is so certain, indisputable, and commonly known that the appellate court could dispense with the requirement that evidence be presented to prove them. (See *Varcoe v. Lee, supra*, 180 Cal. at pp. 346-347.)

In short, “the prosecution simply failed to close a[n] . . . evidentiary gap mandated by the terms of the statute . . . allegedly violated.” (*People v. Acevedo* (2003) 105 Cal.App.4th 195, 199.) Because it is not specifically listed in any schedule, evidence of MDMA’s chemical name, standing alone, is insufficient to prove that it contains a controlled substance or meets the definition of an analog.<sup>5</sup>

“[T]he matter in issue is . . . not within the common knowledge of laymen.” (*Miller v. Los Angeles County Flood Control Dist.* (1973) 8 Cal.3d 689, 702.)

Thus, it was incumbent on the People to introduce competent evidence or a stipulation about MDMA’s chemical structure or effects. Without such evidence, there was no rational basis for a jury of laypersons to infer that 3,4-methylenedioxymethamphetamine contains methamphetamine or amphetamine, or that it has a substantially similar chemical structure or effect to methamphetamine or amphetamine. The Court of Appeal erred in concluding that sufficient evidence supported defendant’s convictions for possession and sale of a controlled substance.

---

<sup>5</sup> Conversely, any substance *expressly listed* by any accepted name in sections 11054 through 11058 is a controlled substance as a matter of law, and the jury need not make any further finding in that regard. (*People v. Medina* (1972) 27 Cal.App.3d 473, 481; see also § 11007 [defining “controlled substance”].)

III. DISPOSITION

The judgment of the Court of Appeal is reversed.

**CORRIGAN, J.**

**WE CONCUR:**

**CANTIL-SAKAUYE, C. J.**

**KENNARD, J.**

**BAXTER, J.**

**WERDEGAR, J.**

**CHIN, J.**

**LIU, J.**

## CONCURRING OPINION BY CHIN, J.

I concur. The People proved that the blue pills defendant sold to the undercover police officer contained 3,4-methylenedioxymethamphetamine (MDMA), commonly known as Ecstasy, but it failed to prove that MDMA is a controlled substance. Accordingly, defendant's convictions of selling and possessing a controlled substance cannot stand.

It appears that MDMA *is* a controlled substance, specifically, that it is either an analog of, or contains, a controlled substance, either amphetamine or methamphetamine. (*People v. Becker* (2010) 183 Cal.App.4th 1151, 1155-1156; *People v. Silver* (1991) 230 Cal.App.3d 389, 392-396; see maj. opn., *ante*, at pp. 3-5.) But this is so as a matter of fact, not as a matter of law. Whether MDMA is a controlled substance is not a fact a court or jury can judicially notice. Here, the prosecution elicited from the expert that the substance contained MDMA, but it neglected to establish further that MDMA is either an analog of or contains either amphetamine or methamphetamine.

Assuming, as the *Becker* and *Silver* cases indicate, MDMA is a controlled substance, it is unfortunate that the prosecution has to prove this fact again and again in every prosecution for possessing or selling it. This problem no longer exists under federal law, because federal law specifically defines MDMA as a controlled substance. (See *U.S. v. Carlson* (11th Cir. 1996) 87 F.3d 440, 444-445; *U.S. v. Raymer* (10th Cir. 1991) 941 F.2d 1031, 1045-1046.) If the Legislature

wishes to do so, it can easily follow the federal example by specifically providing that MDMA is a controlled substance.

In the meantime, trial courts will have to be careful to correctly instruct the jury that, as an element of the crime, it has to determine whether MDMA is a controlled substance. The court can easily do this by defining what is a controlled substance, and a controlled substance analog, for those substances, such as MDMA, that are not specifically enumerated in the relevant statutes. (See maj. opn., *ante*, at p. 3, fn. 2.) Moreover, it should be fairly easy to prove that MDMA is a controlled substance, although the prosecutor did not do so in this case. Presumably, most witnesses with sufficient expertise to testify that a substance contains MDMA would have sufficient expertise to testify additionally that MDMA is either an analog of or contains amphetamine or methamphetamine. But, unless and until the Legislature acts, prosecutors will have to elicit that additional testimony, and juries will have to make that determination.

CHIN, J.

*See next page for addresses and telephone numbers for counsel who argued in Supreme Court.*

**Name of Opinion** People v. Davis

---

**Unpublished Opinion**  
**Original Appeal**  
**Original Proceeding**  
**Review Granted** XXX 200 Cal.App.4th 205  
**Rehearing Granted**

---

**Opinion No.** S198434  
**Date Filed:** July 25, 2013

---

**Court:** Superior  
**County:** Los Angeles  
**Judge:** Barbara R. Johnson

---

**Counsel:**

Carla Castillo, under appointment by the Supreme Court, and John Raphling, under appointment by the Court of Appeal, for Defendant and Appellant.

Kamala D. Harris, Attorney General, Dane R. Gillette, Chief Assistant Attorney General, Pamela C. Hamanaka and Lance E. Winters, Assistant Attorneys General, Lawrence M. Daniels, Scott A. Taryle and Stacy S. Schwartz, Deputy Attorneys General, for Plaintiff and Respondent.

**Counsel who argued in Supreme Court (not intended for publication with opinion):**

Carla Castillo  
1563 Solano Avenue, PMB 286  
Berkeley, CA 94707  
(510) 527-1948

Stacy S. Schwartz  
Deputy Attorney General  
300 South Spring Street, Suite 1702  
Los Angeles, CA 90013  
(213) 897-2252