

WEBVTT

NOTE duration: "00:58:41.749"

NOTE Confidence: 0.94009423

00:00:03.520 --> 00:00:04.580 We should get started.

NOTE Confidence: 0.9226143

00:00:05.359 --> 00:00:06.160 It's my,

NOTE Confidence: 0.9943557

00:00:06.720 --> 00:00:07.859 pleasure to introduce,

NOTE Confidence: 0.81966937

00:00:08.160 --> 00:00:09.059 Ryan Wandre.

NOTE Confidence: 0.91131616

00:00:09.920 --> 00:00:11.440 Ryan is a professor of

NOTE Confidence: 0.91131616

00:00:11.440 --> 00:00:12.980 behavior of psychiatry,

NOTE Confidence: 0.9976642

00:00:13.519 --> 00:00:14.500 at Johns Hopkins.

NOTE Confidence: 0.98857194

00:00:16.095 --> 00:00:17.395 He works on the behavioral

NOTE Confidence: 0.98857194

00:00:17.454 --> 00:00:17.954 pharmacology

NOTE Confidence: 0.99881077

00:00:18.575 --> 00:00:19.475 research unit.

NOTE Confidence: 0.97888315

00:00:20.255 --> 00:00:21.454 I I think of Ryan

NOTE Confidence: 0.97888315

00:00:21.454 --> 00:00:23.055 as being, really one of

NOTE Confidence: 0.97888315

00:00:23.055 --> 00:00:24.755 the leading experts

NOTE Confidence: 0.971047

00:00:25.454 --> 00:00:26.595 in human cannabis,

NOTE Confidence: 0.99969167

00:00:26.975 --> 00:00:27.475 pharmacology.
NOTE Confidence: 0.9948968

00:00:28.850 --> 00:00:30.230 His work has defined
NOTE Confidence: 0.965326

00:00:30.770 --> 00:00:31.990 how product composition,
NOTE Confidence: 0.9730765

00:00:32.530 --> 00:00:33.990 dose, and route of administration
NOTE Confidence: 0.87564754

00:00:35.810 --> 00:00:37.909 shapes cannabis effects and pharmacokinetics.
NOTE Confidence: 0.9789073

00:00:40.465 --> 00:00:41.925 Some of his more notable
NOTE Confidence: 0.9345778

00:00:43.425 --> 00:00:45.185 contributions to the field include,
NOTE Confidence: 0.8809932

00:00:45.585 --> 00:00:47.104 a very important from a
NOTE Confidence: 0.8809932

00:00:47.104 --> 00:00:48.165 public health perspective
NOTE Confidence: 0.96079075

00:00:48.705 --> 00:00:51.364 that, most commercial cannabis edibles
NOTE Confidence: 0.9998248

00:00:52.305 --> 00:00:53.445 are often inaccurately
NOTE Confidence: 0.8985057

00:00:53.985 --> 00:00:54.485 labeled,
NOTE Confidence: 0.9891529

00:00:55.040 --> 00:00:55.860 and that's influenced,
NOTE Confidence: 0.9994494

00:00:57.200 --> 00:00:59.460 you know, regulatory policy nationwide.
NOTE Confidence: 0.9605185

00:01:00.960 --> 00:01:03.059 He has conducted landmark studies
NOTE Confidence: 0.9605185

00:01:03.120 --> 00:01:04.500 in cannabis withdrawal,

NOTE Confidence: 0.89895165

00:01:05.200 --> 00:01:06.720 and as it I can

NOTE Confidence: 0.89895165

00:01:06.720 --> 00:01:08.020 tell you personally influenced

NOTE Confidence: 0.9580243

00:01:08.400 --> 00:01:09.619 influenced my own work

NOTE Confidence: 0.8238838

00:01:10.015 --> 00:01:11.075 in in this space,

NOTE Confidence: 0.9132677

00:01:11.694 --> 00:01:13.135 and he has advanced the

NOTE Confidence: 0.9132677

00:01:13.135 --> 00:01:14.895 understanding of the variability and

NOTE Confidence: 0.9132677

00:01:14.895 --> 00:01:15.395 intoxication,

NOTE Confidence: 0.9826776

00:01:16.415 --> 00:01:18.595 impairment, and therapeutic response

NOTE Confidence: 0.9895569

00:01:19.295 --> 00:01:20.275 across smoking,

NOTE Confidence: 0.9950841

00:01:20.815 --> 00:01:21.315 vaporization,

NOTE Confidence: 0.95461273

00:01:21.855 --> 00:01:22.355 and,

NOTE Confidence: 0.9897175

00:01:22.815 --> 00:01:23.315 oral

NOTE Confidence: 0.9982627

00:01:23.695 --> 00:01:24.195 ingestion.

NOTE Confidence: 0.8946969

00:01:25.500 --> 00:01:27.119 His research extends

NOTE Confidence: 0.98877764

00:01:27.659 --> 00:01:28.399 to CBD,

NOTE Confidence: 0.9985062

00:01:28.780 --> 00:01:29.759 minor cannabinoids,
NOTE Confidence: 0.996175
00:01:30.219 --> 00:01:31.359 effects on sleep,
NOTE Confidence: 0.9462382
00:01:32.539 --> 00:01:34.539 product testing, and cannabis drug
NOTE Confidence: 0.9462382
00:01:34.539 --> 00:01:35.039 interactions.
NOTE Confidence: 0.9477332
00:01:36.219 --> 00:01:37.039 I think, collectively,
NOTE Confidence: 0.98823845
00:01:37.899 --> 00:01:39.200 his work has significantly
NOTE Confidence: 0.9994338
00:01:39.579 --> 00:01:40.959 impacted public health
NOTE Confidence: 0.9920223
00:01:41.315 --> 00:01:43.475 clinical practice and regulatory practice.
NOTE Confidence: 0.9920223
00:01:43.475 --> 00:01:43.975 So,
NOTE Confidence: 0.9394865
00:01:44.435 --> 00:01:46.135 without further ado, Ryan.
NOTE Confidence: 0.96887875
00:01:49.875 --> 00:01:51.075 Thank you, Sarah. That was
NOTE Confidence: 0.96887875
00:01:51.075 --> 00:01:52.375 a a very
NOTE Confidence: 0.98550946
00:01:53.170 --> 00:01:55.010 welcome and touching introduction. I
NOTE Confidence: 0.98550946
00:01:55.010 --> 00:01:56.850 appreciate that, and, it's my
NOTE Confidence: 0.98550946
00:01:56.850 --> 00:01:57.890 pleasure to be here and
NOTE Confidence: 0.98550946
00:01:57.890 --> 00:01:58.930 to share some of our

NOTE Confidence: 0.98550946
00:01:58.930 --> 00:02:00.230 newer stuff with you.
NOTE Confidence: 0.90459865
00:02:00.930 --> 00:02:02.230 So I'm gonna focus,
NOTE Confidence: 0.99982834
00:02:03.410 --> 00:02:03.910 on
NOTE Confidence: 0.9989723
00:02:04.290 --> 00:02:05.190 two recent
NOTE Confidence: 0.990998
00:02:05.695 --> 00:02:07.615 experiments. Actually, if you look
NOTE Confidence: 0.990998
00:02:07.615 --> 00:02:09.395 at it, four recent experiments
NOTE Confidence: 0.990998
00:02:09.455 --> 00:02:11.294 that we've, completed over the
NOTE Confidence: 0.990998
00:02:11.294 --> 00:02:12.255 last two and a half
NOTE Confidence: 0.990998
00:02:12.255 --> 00:02:13.395 years here at Hopkins,
NOTE Confidence: 0.9816493
00:02:14.735 --> 00:02:15.235 evaluating,
NOTE Confidence: 0.9667613
00:02:16.095 --> 00:02:17.855 oral and inhaled delta eight
NOTE Confidence: 0.9667613
00:02:17.855 --> 00:02:18.355 THC,
NOTE Confidence: 0.98170257
00:02:19.580 --> 00:02:21.180 and comparing it with delta
NOTE Confidence: 0.98170257
00:02:21.180 --> 00:02:22.639 nine THC. So,
NOTE Confidence: 0.965232
00:02:24.139 --> 00:02:25.600 just as a a quick
NOTE Confidence: 0.965232

00:02:25.660 --> 00:02:26.880 mention of disclosures,
NOTE Confidence: 0.9399093

00:02:27.419 --> 00:02:29.100 the research was funded by,
NOTE Confidence: 0.9399093

00:02:29.260 --> 00:02:30.620 the substance abuse and mental
NOTE Confidence: 0.9399093

00:02:30.620 --> 00:02:32.560 health service administration with material
NOTE Confidence: 0.9399093

00:02:32.620 --> 00:02:34.080 support from Storz and Nicholl,
NOTE Confidence: 0.9092163

00:02:35.044 --> 00:02:36.405 and that I do have
NOTE Confidence: 0.9092163

00:02:36.405 --> 00:02:37.305 paid consultantships
NOTE Confidence: 0.98318076

00:02:37.925 --> 00:02:38.405 with,
NOTE Confidence: 0.99827874

00:02:38.725 --> 00:02:41.065 some industry, but it's unrelated
NOTE Confidence: 0.99827874

00:02:41.205 --> 00:02:42.585 to this work here.
NOTE Confidence: 0.98992336

00:02:43.845 --> 00:02:45.305 So just to kind of
NOTE Confidence: 0.98992336

00:02:45.365 --> 00:02:46.825 orient us to
NOTE Confidence: 0.97463965

00:02:47.260 --> 00:02:48.480 the question here,
NOTE Confidence: 0.94687426

00:02:49.020 --> 00:02:51.100 delta eight THC is a
NOTE Confidence: 0.94687426

00:02:51.260 --> 00:02:53.020 an isomer of delta nine
NOTE Confidence: 0.94687426

00:02:53.020 --> 00:02:53.520 THC.

NOTE Confidence: 0.99251413
00:02:54.300 --> 00:02:55.120 And the
NOTE Confidence: 0.99145377
00:02:55.500 --> 00:02:57.440 from a, you know, chemical
NOTE Confidence: 0.99145377
00:02:57.500 --> 00:02:59.500 perspective, the difference between the
NOTE Confidence: 0.99145377
00:02:59.500 --> 00:03:01.155 two is a counterclockwise
NOTE Confidence: 0.9956309
00:03:01.855 --> 00:03:03.855 rotation of this double bond
NOTE Confidence: 0.9956309
00:03:03.855 --> 00:03:05.294 here from the nine position
NOTE Confidence: 0.9956309
00:03:05.294 --> 00:03:06.435 to the eight position.
NOTE Confidence: 0.99920815
00:03:07.215 --> 00:03:07.715 So
NOTE Confidence: 0.99353117
00:03:08.014 --> 00:03:08.995 almost chemically
NOTE Confidence: 0.42195424
00:03:09.375 --> 00:03:09.694 ident
NOTE Confidence: 0.9106186
00:03:10.495 --> 00:03:12.995 identical entities, and and both
NOTE Confidence: 0.9106186
00:03:13.055 --> 00:03:13.555 substances
NOTE Confidence: 0.9986494
00:03:13.855 --> 00:03:15.389 are naturally occurring in the
NOTE Confidence: 0.9986494
00:03:15.630 --> 00:03:16.130 cannabis
NOTE Confidence: 0.96276844
00:03:16.669 --> 00:03:19.090 plant. Although delta nine THC
NOTE Confidence: 0.96276844

00:03:19.150 --> 00:03:20.910 is typically much more abundant

NOTE Confidence: 0.96276844

00:03:20.910 --> 00:03:22.209 than delta eight THC.

NOTE Confidence: 0.9917999

00:03:23.870 --> 00:03:25.310 Now we are not the

NOTE Confidence: 0.9917999

00:03:25.310 --> 00:03:26.750 first people to do this

NOTE Confidence: 0.9917999

00:03:26.750 --> 00:03:27.250 work.

NOTE Confidence: 0.9982322

00:03:27.790 --> 00:03:29.889 So I often find myself

NOTE Confidence: 0.99543303

00:03:32.544 --> 00:03:34.385 following the pioneering work of

NOTE Confidence: 0.99543303

00:03:34.385 --> 00:03:35.205 Leo Hollister,

NOTE Confidence: 0.9449708

00:03:36.224 --> 00:03:37.905 in the nineteen seventies who

NOTE Confidence: 0.9449708

00:03:37.905 --> 00:03:39.285 did just an astounding,

NOTE Confidence: 0.91383535

00:03:42.305 --> 00:03:44.405 program of research on cannabinoids.

NOTE Confidence: 0.932471

00:03:46.110 --> 00:03:48.430 And in nineteen seventy three,

NOTE Confidence: 0.932471

00:03:48.430 --> 00:03:49.970 published a couple papers

NOTE Confidence: 0.997599

00:03:50.510 --> 00:03:52.750 on oral and IV delta

NOTE Confidence: 0.997599

00:03:52.750 --> 00:03:54.670 eight THC compared with delta

NOTE Confidence: 0.997599

00:03:54.670 --> 00:03:56.450 nine THC at multiple doses.

NOTE Confidence: 0.9939088
00:03:58.125 --> 00:04:00.045 By their estimate, delta eight
NOTE Confidence: 0.9939088
00:04:00.045 --> 00:04:01.644 THC was about two thirds
NOTE Confidence: 0.9939088
00:04:01.644 --> 00:04:02.924 as potent as delta nine
NOTE Confidence: 0.9939088
00:04:02.924 --> 00:04:03.424 THC.
NOTE Confidence: 0.9987879
00:04:04.284 --> 00:04:05.805 And while I would love
NOTE Confidence: 0.9987879
00:04:05.805 --> 00:04:06.845 for that just to be
NOTE Confidence: 0.9987879
00:04:06.845 --> 00:04:07.905 the end of the story,
NOTE Confidence: 0.9987879
00:04:08.125 --> 00:04:09.885 you know, the challenge in
NOTE Confidence: 0.9987879
00:04:09.885 --> 00:04:10.704 in utilizing
NOTE Confidence: 0.99918544
00:04:11.004 --> 00:04:12.444 the data from back then
NOTE Confidence: 0.99918544
00:04:12.444 --> 00:04:13.105 is that
NOTE Confidence: 0.9921274
00:04:14.370 --> 00:04:15.030 the product,
NOTE Confidence: 0.99783164
00:04:16.050 --> 00:04:18.070 characteristics and routes of administration
NOTE Confidence: 0.9817216
00:04:18.690 --> 00:04:20.610 don't often translate to their
NOTE Confidence: 0.9817216
00:04:20.610 --> 00:04:21.670 current retail
NOTE Confidence: 0.98919296

00:04:22.290 --> 00:04:22.790 environment.
NOTE Confidence: 0.97307175
00:04:23.410 --> 00:04:24.690 And so we don't have
NOTE Confidence: 0.97307175
00:04:24.690 --> 00:04:26.925 many people using IV THC
NOTE Confidence: 0.97307175
00:04:27.164 --> 00:04:28.125 these days, but we do
NOTE Confidence: 0.97307175
00:04:28.125 --> 00:04:29.164 have a lot of people
NOTE Confidence: 0.97307175
00:04:29.164 --> 00:04:31.104 vaporizing it and inhaling it.
NOTE Confidence: 0.9906667
00:04:32.284 --> 00:04:33.585 And then just the limitations
NOTE Confidence: 0.9906667
00:04:33.805 --> 00:04:36.205 of their experimental model, back
NOTE Confidence: 0.9906667
00:04:36.205 --> 00:04:37.264 then was that
NOTE Confidence: 0.9988159
00:04:37.645 --> 00:04:38.384 they relied
NOTE Confidence: 0.99857783
00:04:38.764 --> 00:04:39.264 on
NOTE Confidence: 0.9988382
00:04:40.380 --> 00:04:42.240 observer reports and ratings
NOTE Confidence: 0.97973084
00:04:42.620 --> 00:04:43.760 of drug effects.
NOTE Confidence: 0.96905035
00:04:44.620 --> 00:04:46.220 And so we lacked the
NOTE Confidence: 0.96905035
00:04:46.220 --> 00:04:46.720 interoceptive
NOTE Confidence: 0.99414575
00:04:47.740 --> 00:04:49.600 effects that the the participants

NOTE Confidence: 0.9978801

00:04:50.140 --> 00:04:52.160 experienced of the drug exposure.

NOTE Confidence: 0.8172792

00:04:53.185 --> 00:04:53.845 We lacked,

NOTE Confidence: 0.99907553

00:04:54.545 --> 00:04:56.245 assessments of cognitive performance

NOTE Confidence: 0.99312115

00:04:56.545 --> 00:04:58.865 and and cognitive abilities and

NOTE Confidence: 0.99312115

00:04:58.865 --> 00:04:59.365 functioning,

NOTE Confidence: 0.99895674

00:05:00.145 --> 00:05:01.205 as well as pharmacokinetic

NOTE Confidence: 0.9677157

00:05:01.745 --> 00:05:03.585 assessments. And so what we've

NOTE Confidence: 0.9677157

00:05:03.585 --> 00:05:05.105 tried to do is with

NOTE Confidence: 0.9677157

00:05:05.105 --> 00:05:05.845 full acknowledgment

NOTE Confidence: 0.9946157

00:05:06.225 --> 00:05:08.089 of of what they did,

NOTE Confidence: 0.98532176

00:05:08.870 --> 00:05:10.469 in that pioneering work was

NOTE Confidence: 0.98532176

00:05:10.469 --> 00:05:12.870 rather to to extend that

NOTE Confidence: 0.98532176

00:05:12.870 --> 00:05:13.830 and and to see if

NOTE Confidence: 0.98532176

00:05:13.830 --> 00:05:14.710 we could add on to

NOTE Confidence: 0.98532176

00:05:14.710 --> 00:05:15.909 the story that they started

NOTE Confidence: 0.98532176

00:05:15.909 --> 00:05:16.569 to build
NOTE Confidence: 0.9996

00:05:16.870 --> 00:05:17.930 fifty years ago.
NOTE Confidence: 0.95936257

00:05:19.664 --> 00:05:21.345 The other thing that led
NOTE Confidence: 0.95936257

00:05:21.345 --> 00:05:22.245 us to,
NOTE Confidence: 0.9901396

00:05:23.185 --> 00:05:25.044 studying this particular question,
NOTE Confidence: 0.98280406

00:05:26.224 --> 00:05:28.305 is that five years ago,
NOTE Confidence: 0.98280406

00:05:28.305 --> 00:05:29.824 the language in the twenty
NOTE Confidence: 0.98280406

00:05:29.824 --> 00:05:31.205 eighteen farm bill
NOTE Confidence: 0.9802976

00:05:31.900 --> 00:05:34.000 removed hemp and all derivative
NOTE Confidence: 0.9802976

00:05:34.140 --> 00:05:35.839 products from the Controlled Substances
NOTE Confidence: 0.9802976

00:05:36.060 --> 00:05:37.900 Act. So while there was
NOTE Confidence: 0.9802976

00:05:37.900 --> 00:05:39.120 specific language
NOTE Confidence: 0.97066814

00:05:39.420 --> 00:05:42.400 that exempted delta nine THC
NOTE Confidence: 0.97066814

00:05:42.620 --> 00:05:44.220 from that removal of the
NOTE Confidence: 0.97066814

00:05:44.220 --> 00:05:46.255 Controlled Substances Act, it did
NOTE Confidence: 0.97066814

00:05:46.255 --> 00:05:47.775 not extend to delta eight

NOTE Confidence: 0.97066814
00:05:47.775 --> 00:05:48.275 THC.
NOTE Confidence: 0.9766928
00:05:49.055 --> 00:05:50.815 And because delta eight THC
NOTE Confidence: 0.9766928
00:05:50.815 --> 00:05:52.255 is naturally occurring in the
NOTE Confidence: 0.9766928
00:05:52.255 --> 00:05:53.855 cannabis plant and in hemp
NOTE Confidence: 0.9766928
00:05:53.855 --> 00:05:55.635 plants even in trace amounts,
NOTE Confidence: 0.997939
00:05:56.575 --> 00:05:58.895 it was argued by the
NOTE Confidence: 0.997939
00:05:58.895 --> 00:06:01.315 hemp industry that delta eight
NOTE Confidence: 0.997939
00:06:01.480 --> 00:06:03.500 is a legal byproduct
NOTE Confidence: 0.9954224
00:06:03.880 --> 00:06:05.180 of the hemp plant.
NOTE Confidence: 0.9899904
00:06:05.880 --> 00:06:07.320 And so over the last
NOTE Confidence: 0.9899904
00:06:07.320 --> 00:06:08.620 four years, really,
NOTE Confidence: 0.9945061
00:06:09.000 --> 00:06:11.000 there's been an explosion of
NOTE Confidence: 0.9945061
00:06:11.000 --> 00:06:12.920 delta eight and other kind
NOTE Confidence: 0.9945061
00:06:12.920 --> 00:06:15.504 of analog THC products that
NOTE Confidence: 0.9945061
00:06:15.504 --> 00:06:17.525 have emerged in a quasi
NOTE Confidence: 0.9945061

00:06:17.664 --> 00:06:18.485 label marketplace
NOTE Confidence: 0.9663705

00:06:19.585 --> 00:06:21.104 where these products are being
NOTE Confidence: 0.9663705

00:06:21.104 --> 00:06:23.604 sold without any regulatory control
NOTE Confidence: 0.9663705

00:06:23.745 --> 00:06:25.444 in gas stations and,
NOTE Confidence: 0.9141887

00:06:26.224 --> 00:06:27.525 head shops and,
NOTE Confidence: 0.9431685

00:06:28.630 --> 00:06:29.990 a number of other kind
NOTE Confidence: 0.9431685

00:06:29.990 --> 00:06:31.910 of CBD specific or hemp
NOTE Confidence: 0.9431685

00:06:31.910 --> 00:06:34.089 specific store environment retail environments.
NOTE Confidence: 0.99409086

00:06:34.710 --> 00:06:35.510 And we have,
NOTE Confidence: 0.9805635

00:06:36.070 --> 00:06:37.830 flower products. We've got vape
NOTE Confidence: 0.9805635

00:06:37.830 --> 00:06:40.230 cartridges, oral dose products, usually
NOTE Confidence: 0.9805635

00:06:40.230 --> 00:06:40.730 gummies,
NOTE Confidence: 0.8735259

00:06:41.589 --> 00:06:42.650 kind of representing
NOTE Confidence: 0.9956819

00:06:43.464 --> 00:06:44.904 the majority of the of
NOTE Confidence: 0.9956819

00:06:44.904 --> 00:06:45.725 that industry.
NOTE Confidence: 0.98616153

00:06:47.384 --> 00:06:48.585 But there's not much known

NOTE Confidence: 0.98616153
00:06:48.585 --> 00:06:49.785 about what's actually in those
NOTE Confidence: 0.98616153
00:06:49.785 --> 00:06:51.625 products, and and I'm happy
NOTE Confidence: 0.98616153
00:06:51.625 --> 00:06:52.925 that Cyril mentioned,
NOTE Confidence: 0.9987991
00:06:53.464 --> 00:06:54.824 some of our work with
NOTE Confidence: 0.9987991
00:06:54.824 --> 00:06:56.445 product surveillance analysis.
NOTE Confidence: 0.989827
00:06:57.919 --> 00:07:00.320 We're in the process of
NOTE Confidence: 0.989827
00:07:00.320 --> 00:07:00.820 finalizing
NOTE Confidence: 0.9927427
00:07:01.360 --> 00:07:03.940 a surveillance product testing study
NOTE Confidence: 0.9927427
00:07:04.000 --> 00:07:06.260 on these THC analog products.
NOTE Confidence: 0.9920414
00:07:06.960 --> 00:07:08.800 And what's interesting is delta
NOTE Confidence: 0.9920414
00:07:08.800 --> 00:07:10.639 eight THC is one of
NOTE Confidence: 0.9920414
00:07:10.639 --> 00:07:12.340 about a dozen different
NOTE Confidence: 0.9992387
00:07:12.705 --> 00:07:13.925 novel cannabinoids
NOTE Confidence: 0.9770484
00:07:14.625 --> 00:07:15.905 that have kind of emerged
NOTE Confidence: 0.9770484
00:07:15.905 --> 00:07:16.645 in this,
NOTE Confidence: 0.9335164

00:07:17.025 --> 00:07:18.725 quote, unquote, hemp marketplace,
NOTE Confidence: 0.98826885

00:07:19.985 --> 00:07:21.425 but it's by far the
NOTE Confidence: 0.98826885

00:07:21.425 --> 00:07:22.485 most predominant.
NOTE Confidence: 0.9885006

00:07:23.264 --> 00:07:26.005 And when we've analyzed both
NOTE Confidence: 0.9885006

00:07:26.170 --> 00:07:28.110 oral dose products and vaporized
NOTE Confidence: 0.9885006

00:07:28.250 --> 00:07:30.110 dose products, we see that
NOTE Confidence: 0.624779

00:07:30.490 --> 00:07:30.990 indeed,
NOTE Confidence: 0.9743189

00:07:31.530 --> 00:07:32.650 most of the products do
NOTE Confidence: 0.9743189

00:07:32.650 --> 00:07:34.570 contain delta eight THC. So
NOTE Confidence: 0.9743189

00:07:34.570 --> 00:07:36.330 this is showing the detection
NOTE Confidence: 0.9743189

00:07:36.330 --> 00:07:37.850 of delta eight THC in
NOTE Confidence: 0.9743189

00:07:37.850 --> 00:07:39.210 thirty two of forty three
NOTE Confidence: 0.9743189

00:07:39.210 --> 00:07:39.710 samples,
NOTE Confidence: 0.99391

00:07:40.495 --> 00:07:42.415 purchased in the Baltimore area
NOTE Confidence: 0.99391

00:07:42.415 --> 00:07:43.795 from retail stores.
NOTE Confidence: 0.99142855

00:07:44.255 --> 00:07:45.135 But the other thing to

NOTE Confidence: 0.99142855
00:07:45.135 --> 00:07:46.755 highlight is just the range
NOTE Confidence: 0.99142855
00:07:46.975 --> 00:07:47.795 of milligrams
NOTE Confidence: 0.9852821
00:07:48.255 --> 00:07:49.955 per serving that we found.
NOTE Confidence: 0.99123687
00:07:50.255 --> 00:07:52.095 So everywhere from zero or
NOTE Confidence: 0.99123687
00:07:52.095 --> 00:07:53.375 near zero all the way
NOTE Confidence: 0.99123687
00:07:53.375 --> 00:07:54.335 up to two hundred and
NOTE Confidence: 0.99123687
00:07:54.335 --> 00:07:56.035 fifty milligrams per serving.
NOTE Confidence: 0.99258494
00:07:56.520 --> 00:07:58.120 So just keep that in
NOTE Confidence: 0.99258494
00:07:58.120 --> 00:07:59.880 mind. This is oral dose
NOTE Confidence: 0.99258494
00:07:59.880 --> 00:08:00.380 products
NOTE Confidence: 0.95626915
00:08:00.840 --> 00:08:01.880 as we go through and
NOTE Confidence: 0.95626915
00:08:01.880 --> 00:08:02.920 I show you the data
NOTE Confidence: 0.95626915
00:08:02.920 --> 00:08:04.460 from our laboratory studies.
NOTE Confidence: 0.9766726
00:08:05.400 --> 00:08:06.840 When we look at vape
NOTE Confidence: 0.9766726
00:08:06.840 --> 00:08:08.440 dose products, these are mostly
NOTE Confidence: 0.9766726

00:08:08.440 --> 00:08:09.420 the vape cartridges
NOTE Confidence: 0.9588593

00:08:09.800 --> 00:08:11.340 rather than flower products.
NOTE Confidence: 0.9715278

00:08:12.164 --> 00:08:12.824 But, again,
NOTE Confidence: 0.98415786

00:08:13.125 --> 00:08:14.485 forty three out of forty
NOTE Confidence: 0.98415786

00:08:14.485 --> 00:08:16.805 six THC analog products purchased
NOTE Confidence: 0.98415786

00:08:16.805 --> 00:08:18.585 in the Baltimore area contained
NOTE Confidence: 0.98415786

00:08:18.645 --> 00:08:19.705 delta eight THC
NOTE Confidence: 0.99280494

00:08:20.645 --> 00:08:22.405 at an average concentration of
NOTE Confidence: 0.99280494

00:08:22.405 --> 00:08:24.085 about sixty percent, but a
NOTE Confidence: 0.99280494

00:08:24.085 --> 00:08:26.420 range of just above zero
NOTE Confidence: 0.99280494

00:08:26.420 --> 00:08:27.540 all the way up to
NOTE Confidence: 0.99280494

00:08:27.540 --> 00:08:28.440 ninety percent.
NOTE Confidence: 0.9317664

00:08:30.260 --> 00:08:30.760 So
NOTE Confidence: 0.95999736

00:08:31.620 --> 00:08:32.900 what we've tried to do
NOTE Confidence: 0.95999736

00:08:32.900 --> 00:08:34.740 is take that data and
NOTE Confidence: 0.95999736

00:08:34.740 --> 00:08:35.960 this emergence

NOTE Confidence: 0.99054205
00:08:36.420 --> 00:08:39.000 of of of, an industry
NOTE Confidence: 0.9862952
00:08:39.834 --> 00:08:41.434 where people are really grappling
NOTE Confidence: 0.9862952
00:08:41.434 --> 00:08:42.635 with, well, what does this
NOTE Confidence: 0.9862952
00:08:42.635 --> 00:08:43.915 mean? What do these products
NOTE Confidence: 0.9862952
00:08:43.915 --> 00:08:44.415 do?
NOTE Confidence: 0.9996951
00:08:45.115 --> 00:08:46.415 At the anecdotal
NOTE Confidence: 0.99962276
00:08:46.875 --> 00:08:48.334 level, people often
NOTE Confidence: 0.9737482
00:08:48.714 --> 00:08:50.635 advertise or talk about delta
NOTE Confidence: 0.9737482
00:08:50.635 --> 00:08:52.015 eight as being, like,
NOTE Confidence: 0.97851425
00:08:52.860 --> 00:08:54.000 a safer,
NOTE Confidence: 0.9249395
00:08:54.700 --> 00:08:56.460 better version of delta nine
NOTE Confidence: 0.9249395
00:08:56.460 --> 00:08:58.540 THC. It's, they call people
NOTE Confidence: 0.9249395
00:08:58.540 --> 00:09:00.880 call it THC light or,
NOTE Confidence: 0.9521803
00:09:01.900 --> 00:09:03.420 diet weed or some stuff
NOTE Confidence: 0.9521803
00:09:03.420 --> 00:09:04.160 like that.
NOTE Confidence: 0.9963823

00:09:04.540 --> 00:09:06.555 Really kind of confusing
NOTE Confidence: 0.99317145

00:09:06.935 --> 00:09:08.615 names, but all of them
NOTE Confidence: 0.99317145

00:09:08.615 --> 00:09:10.135 seem to indicate it's a
NOTE Confidence: 0.99317145

00:09:10.135 --> 00:09:11.335 little bit safer. It's a
NOTE Confidence: 0.99317145

00:09:11.335 --> 00:09:12.315 little less worrisome.
NOTE Confidence: 0.9762266

00:09:13.255 --> 00:09:15.275 So our bread and butter,
NOTE Confidence: 0.97714823

00:09:16.535 --> 00:09:18.135 work here at at at
NOTE Confidence: 0.97714823

00:09:18.135 --> 00:09:19.915 Hopkins is to do controlled
NOTE Confidence: 0.9663696

00:09:20.295 --> 00:09:22.030 human laboratory studies with healthy
NOTE Confidence: 0.9663696

00:09:22.030 --> 00:09:22.530 adults,
NOTE Confidence: 0.99376196

00:09:24.030 --> 00:09:25.870 and we recruit folks who
NOTE Confidence: 0.99376196

00:09:25.870 --> 00:09:26.610 have prior,
NOTE Confidence: 0.9851659

00:09:27.150 --> 00:09:28.750 exposure to cannabis, but no
NOTE Confidence: 0.9851659

00:09:28.750 --> 00:09:29.790 use in the last thirty
NOTE Confidence: 0.9851659

00:09:29.790 --> 00:09:31.090 days. We're kind of eliminating
NOTE Confidence: 0.9851659

00:09:31.230 --> 00:09:33.070 the folks that have high

NOTE Confidence: 0.9851659
00:09:33.070 --> 00:09:35.230 daily use behavior with a
NOTE Confidence: 0.9851659
00:09:35.230 --> 00:09:36.690 high threshold of tolerance.
NOTE Confidence: 0.95802575
00:09:37.425 --> 00:09:38.705 We use a within subjects
NOTE Confidence: 0.95802575
00:09:38.705 --> 00:09:40.865 crossover design to the extent
NOTE Confidence: 0.95802575
00:09:40.865 --> 00:09:42.404 we can because we wanna
NOTE Confidence: 0.95802575
00:09:42.464 --> 00:09:43.684 minimize interindividual
NOTE Confidence: 0.99993694
00:09:44.065 --> 00:09:44.565 variability
NOTE Confidence: 0.9499094
00:09:45.184 --> 00:09:46.785 in our evaluation of of
NOTE Confidence: 0.9499094
00:09:46.785 --> 00:09:48.804 the drug product under scrutiny.
NOTE Confidence: 0.9949514
00:09:49.820 --> 00:09:51.100 And in this case, because
NOTE Confidence: 0.9949514
00:09:51.100 --> 00:09:53.200 there's both oral and inhaled
NOTE Confidence: 0.9949514
00:09:53.260 --> 00:09:55.500 dose products that predominate the
NOTE Confidence: 0.9949514
00:09:55.500 --> 00:09:56.460 market, we wanted to look
NOTE Confidence: 0.9949514
00:09:56.460 --> 00:09:57.760 at both routes of administration.
NOTE Confidence: 0.96692085
00:09:58.700 --> 00:10:00.140 So in this case, in
NOTE Confidence: 0.96692085

00:10:00.140 --> 00:10:01.100 in this the case of
NOTE Confidence: 0.96692085

00:10:01.100 --> 00:10:02.300 the studies that I'm gonna
NOTE Confidence: 0.96692085

00:10:02.300 --> 00:10:03.644 show you is we have
NOTE Confidence: 0.96692085

00:10:03.644 --> 00:10:05.485 a placebo control as well
NOTE Confidence: 0.96692085

00:10:05.485 --> 00:10:06.845 as an active control of
NOTE Confidence: 0.96692085

00:10:06.845 --> 00:10:08.365 delta nine THC because we're
NOTE Confidence: 0.96692085

00:10:08.365 --> 00:10:09.824 interested in how it relates.
NOTE Confidence: 0.9931448

00:10:11.084 --> 00:10:12.524 So I'm gonna show you
NOTE Confidence: 0.9931448

00:10:12.524 --> 00:10:14.365 data from four studies, and
NOTE Confidence: 0.9931448

00:10:14.365 --> 00:10:15.804 they're gonna be clustered into
NOTE Confidence: 0.9931448

00:10:15.804 --> 00:10:16.304 two,
NOTE Confidence: 0.9983227

00:10:17.459 --> 00:10:18.759 kind of pairs.
NOTE Confidence: 0.9954516

00:10:19.459 --> 00:10:21.160 So studies one and two,
NOTE Confidence: 0.9440001

00:10:22.019 --> 00:10:22.519 evaluated,
NOTE Confidence: 0.99100804

00:10:23.699 --> 00:10:25.639 ten, twenty, and forty milligram
NOTE Confidence: 0.99100804

00:10:25.699 --> 00:10:27.399 doses of delta eight THC

NOTE Confidence: 0.99100804
00:10:27.540 --> 00:10:29.235 and a twenty milligram dose
NOTE Confidence: 0.99100804
00:10:29.315 --> 00:10:30.695 of delta nine THC
NOTE Confidence: 0.99045414
00:10:31.394 --> 00:10:33.635 administered with both oral and
NOTE Confidence: 0.99045414
00:10:33.635 --> 00:10:35.255 vaporized routes of administration.
NOTE Confidence: 0.96840936
00:10:36.195 --> 00:10:38.054 Now these studies were recently
NOTE Confidence: 0.96840936
00:10:38.115 --> 00:10:39.635 published in the journal drug
NOTE Confidence: 0.96840936
00:10:39.635 --> 00:10:41.154 and alcohol dependence, and so
NOTE Confidence: 0.96840936
00:10:41.154 --> 00:10:42.115 this is kind of out
NOTE Confidence: 0.96840936
00:10:42.115 --> 00:10:43.154 in the world. It's not
NOTE Confidence: 0.96840936
00:10:43.154 --> 00:10:44.135 brand new data,
NOTE Confidence: 0.89138395
00:10:44.750 --> 00:10:46.030 but these things were just,
NOTE Confidence: 0.8815519
00:10:47.150 --> 00:10:48.929 hit press, over the summer.
NOTE Confidence: 0.9297365
00:10:50.110 --> 00:10:50.590 And,
NOTE Confidence: 0.9994294
00:10:51.390 --> 00:10:52.290 in the vaporization
NOTE Confidence: 0.97542864
00:10:52.670 --> 00:10:54.190 study, we used a a
NOTE Confidence: 0.97542864

00:10:54.190 --> 00:10:56.190 handheld vaporizer made by Storz

NOTE Confidence: 0.97542864

00:10:56.190 --> 00:10:56.929 and Bickel.

NOTE Confidence: 0.9824301

00:10:57.785 --> 00:10:59.225 The product was heated to

NOTE Confidence: 0.9824301

00:10:59.225 --> 00:11:00.584 two hundred and four degrees

NOTE Confidence: 0.9824301

00:11:00.584 --> 00:11:01.084 Celsius,

NOTE Confidence: 0.9883466

00:11:01.704 --> 00:11:03.324 and participants exhaled

NOTE Confidence: 0.9972034

00:11:03.625 --> 00:11:05.065 the the drug through a

NOTE Confidence: 0.9972034

00:11:05.065 --> 00:11:06.985 carbon filter to help mask

NOTE Confidence: 0.9972034

00:11:06.985 --> 00:11:08.285 and preserve the blinding.

NOTE Confidence: 0.9867231

00:11:09.464 --> 00:11:10.665 For the oral dose study,

NOTE Confidence: 0.9867231

00:11:10.665 --> 00:11:12.240 we baked pure delta eight

NOTE Confidence: 0.9867231

00:11:12.240 --> 00:11:13.680 THC or pure delta nine

NOTE Confidence: 0.9867231

00:11:13.680 --> 00:11:15.460 THC into a can

NOTE Confidence: 0.8659961

00:11:16.240 --> 00:11:18.180 an infused brownie format.

NOTE Confidence: 0.98171574

00:11:18.560 --> 00:11:19.520 And so in both of

NOTE Confidence: 0.98171574

00:11:19.520 --> 00:11:21.440 these cases across both all

NOTE Confidence: 0.98171574

00:11:21.440 --> 00:11:23.440 these studies, we're using pure

NOTE Confidence: 0.98171574

00:11:23.440 --> 00:11:24.800 delta eight THC and pure

NOTE Confidence: 0.98171574

00:11:24.800 --> 00:11:25.920 delta nine THC that were

NOTE Confidence: 0.98171574

00:11:25.920 --> 00:11:26.420 synthetically

NOTE Confidence: 0.7050366

00:11:27.524 --> 00:11:28.745 us for these experiments.

NOTE Confidence: 0.99820113

00:11:30.245 --> 00:11:31.845 Now in these first two

NOTE Confidence: 0.99820113

00:11:31.845 --> 00:11:32.345 studies,

NOTE Confidence: 0.9884686

00:11:33.125 --> 00:11:35.524 we had nineteen participants complete

NOTE Confidence: 0.9884686

00:11:35.524 --> 00:11:36.725 the oral dose study and

NOTE Confidence: 0.9884686

00:11:36.725 --> 00:11:38.745 twenty participants complete the vaporized

NOTE Confidence: 0.9884686

00:11:38.885 --> 00:11:39.385 study.

NOTE Confidence: 0.9798083

00:11:39.845 --> 00:11:40.885 We had a pretty good

NOTE Confidence: 0.9798083

00:11:40.885 --> 00:11:41.785 balance of,

NOTE Confidence: 0.9881453

00:11:42.600 --> 00:11:43.880 males and females in the

NOTE Confidence: 0.9881453

00:11:43.880 --> 00:11:45.720 study and good diversity in

NOTE Confidence: 0.9881453

00:11:45.720 --> 00:11:47.339 terms of racial profiling,
NOTE Confidence: 0.9996497

00:11:48.040 --> 00:11:49.399 and our average age was
NOTE Confidence: 0.9996497

00:11:49.399 --> 00:11:50.860 around thirty years old.
NOTE Confidence: 0.9946021

00:11:51.320 --> 00:11:52.600 These people had no past
NOTE Confidence: 0.9946021

00:11:52.600 --> 00:11:54.360 month cannabis use, no tobacco
NOTE Confidence: 0.9946021

00:11:54.360 --> 00:11:55.660 use, and light to moderate
NOTE Confidence: 0.9946021

00:11:55.720 --> 00:11:56.620 alcohol use.
NOTE Confidence: 0.9972688

00:11:58.345 --> 00:12:00.205 In studies three and four,
NOTE Confidence: 0.9878544

00:12:00.745 --> 00:12:02.505 these were sequential studies. So
NOTE Confidence: 0.9878544

00:12:02.505 --> 00:12:03.705 after the first two studies
NOTE Confidence: 0.9878544

00:12:03.705 --> 00:12:04.985 were done, we saw a
NOTE Confidence: 0.9878544

00:12:04.985 --> 00:12:06.525 couple interesting outcomes.
NOTE Confidence: 0.9966094

00:12:07.865 --> 00:12:09.085 One was that
NOTE Confidence: 0.9876971

00:12:09.465 --> 00:12:11.165 our max doses weren't
NOTE Confidence: 0.9929838

00:12:11.670 --> 00:12:14.089 quite producing maximal drug effects
NOTE Confidence: 0.9398533

00:12:14.470 --> 00:12:15.750 relative to what we've seen

NOTE Confidence: 0.9398533
00:12:15.750 --> 00:12:17.529 in other experiments we've done,
NOTE Confidence: 0.98519737
00:12:17.910 --> 00:12:18.890 in our laboratory.
NOTE Confidence: 0.97217107
00:12:19.350 --> 00:12:20.390 So we wanted to push
NOTE Confidence: 0.97217107
00:12:20.390 --> 00:12:21.350 the dose a little bit
NOTE Confidence: 0.97217107
00:12:21.350 --> 00:12:22.630 and fill out our dose
NOTE Confidence: 0.97217107
00:12:22.630 --> 00:12:24.330 response curves. We added,
NOTE Confidence: 0.9889904
00:12:24.915 --> 00:12:26.915 basically replicated those first two
NOTE Confidence: 0.9889904
00:12:26.915 --> 00:12:28.434 studies with oral and vaporized
NOTE Confidence: 0.9889904
00:12:28.434 --> 00:12:30.115 dosing at thirty and sixty
NOTE Confidence: 0.9889904
00:12:30.115 --> 00:12:31.894 milligrams of delta eight THC
NOTE Confidence: 0.9932777
00:12:32.595 --> 00:12:34.434 and thirty milligrams of delta
NOTE Confidence: 0.9932777
00:12:34.434 --> 00:12:35.175 nine THC.
NOTE Confidence: 0.99770063
00:12:35.955 --> 00:12:37.495 In addition to our traditional
NOTE Confidence: 0.99770063
00:12:37.714 --> 00:12:39.850 self report assessments and and
NOTE Confidence: 0.99770063
00:12:39.850 --> 00:12:40.350 pharmacodynamic
NOTE Confidence: 0.9959

00:12:40.730 --> 00:12:42.670 assessments and pharmacokinetic assessments,

NOTE Confidence: 0.9938924

00:12:43.210 --> 00:12:45.550 we also added simulated driving,

NOTE Confidence: 0.94411504

00:12:46.170 --> 00:12:47.929 and standard field sobriety tests.

NOTE Confidence: 0.94411504

00:12:47.929 --> 00:12:49.790 We were really interested in

NOTE Confidence: 0.9985727

00:12:50.250 --> 00:12:50.750 assessing

NOTE Confidence: 0.923459

00:12:51.370 --> 00:12:52.970 what did the effect of

NOTE Confidence: 0.923459

00:12:52.970 --> 00:12:54.570 delta A THC look on

NOTE Confidence: 0.923459

00:12:54.570 --> 00:12:55.070 driving

NOTE Confidence: 0.96857965

00:12:56.285 --> 00:12:58.045 performance. Again, we, for oral

NOTE Confidence: 0.96857965

00:12:58.045 --> 00:13:00.525 dosing, we, baked pure compounds

NOTE Confidence: 0.96857965

00:13:00.525 --> 00:13:02.385 into a brownie format. For

NOTE Confidence: 0.96857965

00:13:02.684 --> 00:13:04.605 inhalation, we used a different

NOTE Confidence: 0.96857965

00:13:04.605 --> 00:13:06.125 vaporizer made by the same

NOTE Confidence: 0.96857965

00:13:06.125 --> 00:13:07.245 company. So it's the same

NOTE Confidence: 0.96857965

00:13:07.245 --> 00:13:08.464 vaporization technology,

NOTE Confidence: 0.9199939

00:13:09.140 --> 00:13:10.260 but we moved to the

NOTE Confidence: 0.9199939
00:13:10.260 --> 00:13:11.720 volcano, which is a desktop
NOTE Confidence: 0.9993373
00:13:12.020 --> 00:13:12.520 vaporizer
NOTE Confidence: 0.9690852
00:13:13.460 --> 00:13:15.380 simply because the dosing pad
NOTE Confidence: 0.9690852
00:13:15.380 --> 00:13:16.360 and the handheld,
NOTE Confidence: 0.9994035
00:13:17.140 --> 00:13:18.900 vaporizer was too small to
NOTE Confidence: 0.9994035
00:13:18.900 --> 00:13:20.440 hold the amount of liquid
NOTE Confidence: 0.9898215
00:13:20.900 --> 00:13:22.580 required to get that sixty
NOTE Confidence: 0.9898215
00:13:22.580 --> 00:13:24.815 milligram dose. It was leaking
NOTE Confidence: 0.9898215
00:13:24.815 --> 00:13:25.934 through. So we went to
NOTE Confidence: 0.9898215
00:13:25.934 --> 00:13:27.054 the volcano, which had a
NOTE Confidence: 0.9898215
00:13:27.054 --> 00:13:28.895 bigger dosing pad just for
NOTE Confidence: 0.9898215
00:13:28.895 --> 00:13:29.395 feasibility.
NOTE Confidence: 0.96282154
00:13:31.375 --> 00:13:33.075 In this these two experiments,
NOTE Confidence: 0.96282154
00:13:33.135 --> 00:13:34.915 we again had twenty participants
NOTE Confidence: 0.96282154
00:13:35.215 --> 00:13:36.195 in each study,
NOTE Confidence: 0.9894622

00:13:36.650 --> 00:13:37.390 a decent,
NOTE Confidence: 0.9595169

00:13:37.770 --> 00:13:40.110 ratio of, males to females,
NOTE Confidence: 0.9502156

00:13:40.650 --> 00:13:41.690 again, a mean age of
NOTE Confidence: 0.9502156

00:13:41.690 --> 00:13:43.050 about thirty and good racial
NOTE Confidence: 0.9502156

00:13:43.050 --> 00:13:43.550 diversity,
NOTE Confidence: 0.9587131

00:13:44.090 --> 00:13:45.770 no tobacco use, no past
NOTE Confidence: 0.9587131

00:13:45.770 --> 00:13:47.050 month cannabis use, and light
NOTE Confidence: 0.9587131

00:13:47.050 --> 00:13:48.590 to moderate alcohol use.
NOTE Confidence: 0.99849325

00:13:49.635 --> 00:13:50.835 So the assessments that we're
NOTE Confidence: 0.99849325

00:13:50.835 --> 00:13:52.515 looking at across all four
NOTE Confidence: 0.99849325

00:13:52.515 --> 00:13:53.015 studies,
NOTE Confidence: 0.9868149

00:13:53.875 --> 00:13:56.115 included subjective assessments of drug
NOTE Confidence: 0.9868149

00:13:56.115 --> 00:13:57.635 effects on a hundred point
NOTE Confidence: 0.9868149

00:13:57.635 --> 00:13:58.935 visual analog scale,
NOTE Confidence: 0.9461649

00:13:59.715 --> 00:14:02.055 cognitive performance tests that included
NOTE Confidence: 0.86016345

00:14:03.230 --> 00:14:03.670 a,

NOTE Confidence: 0.90078557
00:14:04.110 --> 00:14:06.429 paced, serial addition task where
NOTE Confidence: 0.90078557
00:14:06.429 --> 00:14:07.730 participants had to,
NOTE Confidence: 0.94548726
00:14:08.110 --> 00:14:09.730 were presented with a number,
NOTE Confidence: 0.94548726
00:14:10.029 --> 00:14:10.529 one,
NOTE Confidence: 0.5018103
00:14:11.710 --> 00:14:12.210 single,
NOTE Confidence: 0.9922949
00:14:12.670 --> 00:14:14.450 digit integer at a time,
NOTE Confidence: 0.9922949
00:14:14.585 --> 00:14:15.705 and they had to add
NOTE Confidence: 0.9922949
00:14:15.705 --> 00:14:17.705 sequential numbers and select the
NOTE Confidence: 0.9922949
00:14:17.705 --> 00:14:18.665 sum of the last two
NOTE Confidence: 0.9922949
00:14:18.665 --> 00:14:19.865 numbers viewed at the bottom
NOTE Confidence: 0.9922949
00:14:19.865 --> 00:14:21.145 of the screen. And that
NOTE Confidence: 0.9922949
00:14:21.145 --> 00:14:22.025 went on and on for
NOTE Confidence: 0.9922949
00:14:22.025 --> 00:14:22.925 ninety trials.
NOTE Confidence: 0.982258
00:14:23.385 --> 00:14:25.145 We did a computerized version
NOTE Confidence: 0.982258
00:14:25.145 --> 00:14:26.605 of the digit symbol substitution
NOTE Confidence: 0.982258

00:14:26.825 --> 00:14:28.505 task where patterns were presented

NOTE Confidence: 0.982258

00:14:28.505 --> 00:14:29.725 and had to be replicated

NOTE Confidence: 0.982258

00:14:29.865 --> 00:14:30.365 using

NOTE Confidence: 0.95732445

00:14:43.904 --> 00:14:45.125 We use the Druid,

NOTE Confidence: 0.9726588

00:14:45.825 --> 00:14:47.505 app, which is a two

NOTE Confidence: 0.9726588

00:14:47.505 --> 00:14:48.705 and a half minute test

NOTE Confidence: 0.9726588

00:14:48.705 --> 00:14:50.485 of multiple aspects of cognitive

NOTE Confidence: 0.9726588

00:14:50.625 --> 00:14:51.125 functioning,

NOTE Confidence: 0.96160734

00:14:51.665 --> 00:14:52.165 including,

NOTE Confidence: 0.99874604

00:14:52.625 --> 00:14:53.605 divided attention,

NOTE Confidence: 0.9889852

00:14:54.545 --> 00:14:56.464 working memory, and and higher

NOTE Confidence: 0.9889852

00:14:56.464 --> 00:14:57.845 order cognitive processing.

NOTE Confidence: 0.99754393

00:14:58.670 --> 00:15:00.030 Here's a picture of our,

NOTE Confidence: 0.97918224

00:15:00.510 --> 00:15:01.650 high level driving,

NOTE Confidence: 0.96523464

00:15:02.190 --> 00:15:03.950 simulator, which is a a

NOTE Confidence: 0.96523464

00:15:03.950 --> 00:15:06.110 proper sit down modeling a

NOTE Confidence: 0.96523464
00:15:06.110 --> 00:15:08.030 car, hundred and thirty five
NOTE Confidence: 0.96523464
00:15:08.030 --> 00:15:09.810 degree view with three monitors,
NOTE Confidence: 0.9756186
00:15:10.350 --> 00:15:11.870 big steering wheel, seat belt,
NOTE Confidence: 0.9756186
00:15:11.870 --> 00:15:12.770 the whole nine.
NOTE Confidence: 0.98620325
00:15:13.685 --> 00:15:15.445 We had our staff trained
NOTE Confidence: 0.98620325
00:15:15.445 --> 00:15:17.705 by Maryland State Police in
NOTE Confidence: 0.98620325
00:15:17.765 --> 00:15:18.265 administering
NOTE Confidence: 0.99810386
00:15:18.645 --> 00:15:20.105 field sobriety tests.
NOTE Confidence: 0.9835096
00:15:20.965 --> 00:15:22.325 Our staff went through the
NOTE Confidence: 0.9835096
00:15:22.325 --> 00:15:24.005 same training as police cadets
NOTE Confidence: 0.9835096
00:15:24.005 --> 00:15:24.965 do. It was a three
NOTE Confidence: 0.9835096
00:15:24.965 --> 00:15:25.785 day course,
NOTE Confidence: 0.9547698
00:15:26.130 --> 00:15:27.570 and then we had a,
NOTE Confidence: 0.9547698
00:15:27.890 --> 00:15:29.750 Maryland State Police officer
NOTE Confidence: 0.9383824
00:15:30.210 --> 00:15:31.650 who was a trainer come
NOTE Confidence: 0.9383824

00:15:31.650 --> 00:15:33.490 in and do fidelity testing
NOTE Confidence: 0.9383824

00:15:33.490 --> 00:15:34.550 throughout the experiments
NOTE Confidence: 0.99804264

00:15:35.250 --> 00:15:37.010 on ten percent of all
NOTE Confidence: 0.99804264

00:15:37.010 --> 00:15:37.510 assessments.
NOTE Confidence: 0.9654286

00:15:38.725 --> 00:15:40.085 And then we collected vital
NOTE Confidence: 0.9654286

00:15:40.085 --> 00:15:41.845 signs and collected blood and,
NOTE Confidence: 0.9654286

00:15:42.245 --> 00:15:43.845 for biomarkers to look at
NOTE Confidence: 0.9654286

00:15:43.845 --> 00:15:44.345 pharmacokinetics.
NOTE Confidence: 0.9830127

00:15:46.325 --> 00:15:47.205 So what I'm gonna do
NOTE Confidence: 0.9830127

00:15:47.205 --> 00:15:48.985 is I'll show you results
NOTE Confidence: 0.9830127

00:15:49.125 --> 00:15:50.665 for the first two experiments
NOTE Confidence: 0.9830127

00:15:50.790 --> 00:15:52.470 side by side, oral dosing
NOTE Confidence: 0.9830127

00:15:52.470 --> 00:15:53.750 in the left hand panel
NOTE Confidence: 0.9830127

00:15:53.750 --> 00:15:55.269 and vaporization on the right
NOTE Confidence: 0.9830127

00:15:55.269 --> 00:15:56.009 hand panel.
NOTE Confidence: 0.96608573

00:15:56.630 --> 00:15:57.750 So you can just kinda

NOTE Confidence: 0.96608573
00:15:57.750 --> 00:15:59.110 see side by side what
NOTE Confidence: 0.96608573
00:15:59.110 --> 00:16:00.870 oral dosing looks like versus
NOTE Confidence: 0.96608573
00:16:00.870 --> 00:16:02.250 vaporized dosing and,
NOTE Confidence: 0.9663112
00:16:02.709 --> 00:16:03.370 the difference,
NOTE Confidence: 0.98920184
00:16:03.910 --> 00:16:05.829 between delta eight doses and
NOTE Confidence: 0.98920184
00:16:05.829 --> 00:16:07.585 and and the comparison delta
NOTE Confidence: 0.98920184
00:16:07.585 --> 00:16:09.045 nine and placebo doses.
NOTE Confidence: 0.9952794
00:16:10.785 --> 00:16:12.225 So for this first slide,
NOTE Confidence: 0.9952794
00:16:12.225 --> 00:16:13.605 you're seeing subjective
NOTE Confidence: 0.94617915
00:16:14.065 --> 00:16:15.765 overall drug effect ratings.
NOTE Confidence: 0.94129205
00:16:16.305 --> 00:16:17.105 And you can see on
NOTE Confidence: 0.94129205
00:16:17.105 --> 00:16:18.225 the left hand panel with
NOTE Confidence: 0.94129205
00:16:18.225 --> 00:16:20.305 oral dosing, really nice dose
NOTE Confidence: 0.94129205
00:16:20.305 --> 00:16:21.905 orderliness in terms of overall
NOTE Confidence: 0.94129205
00:16:21.905 --> 00:16:23.269 subjective drug effect.
NOTE Confidence: 0.9978324

00:16:24.130 --> 00:16:26.050 The delta nine THC dose
NOTE Confidence: 0.9978324

00:16:26.050 --> 00:16:27.110 was qualitatively
NOTE Confidence: 0.9832821

00:16:27.570 --> 00:16:29.430 the highest rate rated,
NOTE Confidence: 0.9832344

00:16:29.970 --> 00:16:30.709 drug effect,
NOTE Confidence: 0.9931271

00:16:31.490 --> 00:16:32.850 and maxing out at about
NOTE Confidence: 0.9931271

00:16:32.850 --> 00:16:33.810 a fifty out of a
NOTE Confidence: 0.9931271

00:16:33.810 --> 00:16:34.310 hundred,
NOTE Confidence: 0.96655273

00:16:35.009 --> 00:16:36.690 on our overall drug effect
NOTE Confidence: 0.96655273

00:16:36.690 --> 00:16:37.155 scale.
NOTE Confidence: 0.9990226

00:16:37.955 --> 00:16:38.775 With vaporization,
NOTE Confidence: 0.9983195

00:16:39.955 --> 00:16:41.175 we got a qualitatively
NOTE Confidence: 0.9997484

00:16:41.715 --> 00:16:42.215 higher
NOTE Confidence: 0.93173933

00:16:42.915 --> 00:16:44.915 peak magnitude compared with oral
NOTE Confidence: 0.93173933

00:16:44.915 --> 00:16:45.415 dosing.
NOTE Confidence: 0.9659881

00:16:46.035 --> 00:16:47.395 The thirty mill the twenty
NOTE Confidence: 0.9659881

00:16:47.395 --> 00:16:48.995 milligram delta nine dose was,

NOTE Confidence: 0.9659881

00:16:48.995 --> 00:16:51.255 again, qualitatively the highest dose.

NOTE Confidence: 0.9659881

00:16:51.500 --> 00:16:52.779 The delta eight doses were

NOTE Confidence: 0.9659881

00:16:52.779 --> 00:16:54.300 dosed orderly, but we got

NOTE Confidence: 0.9659881

00:16:54.300 --> 00:16:55.519 much less separation

NOTE Confidence: 0.9980031

00:16:56.220 --> 00:16:58.160 between the ten milligram dose

NOTE Confidence: 0.9980031

00:16:58.459 --> 00:17:00.480 and the forty milligram dose.

NOTE Confidence: 0.9963011

00:17:01.019 --> 00:17:02.459 And I believe that is

NOTE Confidence: 0.9963011

00:17:02.459 --> 00:17:03.680 a route of administration

NOTE Confidence: 0.98867595

00:17:04.299 --> 00:17:04.799 specific

NOTE Confidence: 0.9796029

00:17:05.415 --> 00:17:05.915 effect

NOTE Confidence: 0.940259

00:17:06.375 --> 00:17:08.555 where we're getting differential metabolism

NOTE Confidence: 0.9372575

00:17:08.855 --> 00:17:10.775 with oral dosing and we're

NOTE Confidence: 0.9372575

00:17:10.775 --> 00:17:12.535 getting kind of bolus dosing

NOTE Confidence: 0.9372575

00:17:12.535 --> 00:17:13.275 with inhalation

NOTE Confidence: 0.9749327

00:17:14.135 --> 00:17:15.494 that minimizes that,

NOTE Confidence: 0.97815436

00:17:16.055 --> 00:17:18.295 difference in in metabolism, and
NOTE Confidence: 0.97815436

00:17:18.295 --> 00:17:19.515 I'll show you some pharmacokinetic
NOTE Confidence: 0.9894384

00:17:19.895 --> 00:17:21.150 data that supports that.
NOTE Confidence: 0.9799047

00:17:22.190 --> 00:17:24.290 And, again, probably some titration
NOTE Confidence: 0.9799047

00:17:24.430 --> 00:17:25.550 in terms of how the
NOTE Confidence: 0.9799047

00:17:25.550 --> 00:17:27.010 the drug is being administered.
NOTE Confidence: 0.9856785

00:17:28.670 --> 00:17:30.670 So, again, overall, we're getting
NOTE Confidence: 0.9856785

00:17:30.670 --> 00:17:31.170 moderate
NOTE Confidence: 0.9870454

00:17:31.710 --> 00:17:33.230 to mild drug effects at
NOTE Confidence: 0.9870454

00:17:33.230 --> 00:17:34.050 these doses.
NOTE Confidence: 0.9797217

00:17:34.905 --> 00:17:36.345 But what's interesting is that
NOTE Confidence: 0.9797217

00:17:36.345 --> 00:17:38.105 across the subjective drug effects,
NOTE Confidence: 0.9797217

00:17:38.105 --> 00:17:39.305 and I'll show you how
NOTE Confidence: 0.9797217

00:17:39.305 --> 00:17:40.765 high people reported,
NOTE Confidence: 0.7871593

00:17:41.545 --> 00:17:42.045 feeling,
NOTE Confidence: 0.96377337

00:17:42.744 --> 00:17:44.525 again, a little bit more,

NOTE Confidence: 0.89391
00:17:45.225 --> 00:17:46.925 spread with the delta doses
NOTE Confidence: 0.89391
00:17:46.984 --> 00:17:48.265 on this rating, but by
NOTE Confidence: 0.89391
00:17:48.265 --> 00:17:49.005 and large,
NOTE Confidence: 0.981517
00:17:49.320 --> 00:17:50.059 not as much,
NOTE Confidence: 0.9866109
00:17:50.519 --> 00:17:52.600 dose difference in the vapes
NOTE Confidence: 0.9866109
00:17:52.600 --> 00:17:54.140 compared with the oral dosing.
NOTE Confidence: 0.9981195
00:17:54.840 --> 00:17:55.340 Again,
NOTE Confidence: 0.8972977
00:17:55.640 --> 00:17:57.000 at the peak level, the
NOTE Confidence: 0.8972977
00:17:57.000 --> 00:17:59.159 delta nine THC comparison doses
NOTE Confidence: 0.8972977
00:17:59.159 --> 00:18:00.220 is qualitatively
NOTE Confidence: 0.9931821
00:18:00.600 --> 00:18:01.799 higher, but it's about the
NOTE Confidence: 0.9931821
00:18:01.799 --> 00:18:03.500 same as that forty milligram
NOTE Confidence: 0.9931821
00:18:03.559 --> 00:18:05.085 delta eight THC dose,
NOTE Confidence: 0.98146856
00:18:05.945 --> 00:18:07.644 at the peak amount with,
NOTE Confidence: 0.9991219
00:18:08.664 --> 00:18:09.484 both ratings.
NOTE Confidence: 0.9724667

00:18:11.065 --> 00:18:11.804 And then
NOTE Confidence: 0.9569777

00:18:12.505 --> 00:18:13.625 by and large with the
NOTE Confidence: 0.9569777

00:18:13.625 --> 00:18:14.984 delta eight drugs up to
NOTE Confidence: 0.9569777

00:18:14.984 --> 00:18:16.984 forty milligrams, we'd see much
NOTE Confidence: 0.9569777

00:18:16.984 --> 00:18:18.365 in the way of unpleasant
NOTE Confidence: 0.9569777

00:18:18.505 --> 00:18:20.640 or unwanted drug effects. So
NOTE Confidence: 0.9569777

00:18:20.780 --> 00:18:22.160 very little side effects
NOTE Confidence: 0.93897194

00:18:22.540 --> 00:18:23.820 and also very few side
NOTE Confidence: 0.93897194

00:18:23.820 --> 00:18:25.359 effects of this twenty milligram
NOTE Confidence: 0.93897194

00:18:25.420 --> 00:18:27.119 delta nine THC dose.
NOTE Confidence: 0.96171826

00:18:27.500 --> 00:18:28.880 So, again, these are experienced
NOTE Confidence: 0.96171826

00:18:29.020 --> 00:18:31.119 but not acutely tolerant cannabis
NOTE Confidence: 0.96171826

00:18:31.180 --> 00:18:32.140 users. And so this is
NOTE Confidence: 0.96171826

00:18:32.140 --> 00:18:34.085 a little not really terribly
NOTE Confidence: 0.96171826

00:18:34.085 --> 00:18:34.585 surprising.
NOTE Confidence: 0.98787177

00:18:36.244 --> 00:18:37.205 But what we do see

NOTE Confidence: 0.98787177
00:18:37.205 --> 00:18:38.185 is we see
NOTE Confidence: 0.9995215
00:18:38.565 --> 00:18:39.305 the subjective
NOTE Confidence: 0.9986374
00:18:40.244 --> 00:18:42.185 perception of impairment of cognitive
NOTE Confidence: 0.9986374
00:18:42.244 --> 00:18:42.744 function.
NOTE Confidence: 0.9974958
00:18:43.125 --> 00:18:44.744 So it's not aversive,
NOTE Confidence: 0.9961648
00:18:45.045 --> 00:18:46.505 but they do feel impaired.
NOTE Confidence: 0.97839594
00:18:47.480 --> 00:18:48.520 And you can see here
NOTE Confidence: 0.97839594
00:18:48.760 --> 00:18:50.380 and this is self ratings
NOTE Confidence: 0.97839594
00:18:50.440 --> 00:18:51.800 in their confidence and their
NOTE Confidence: 0.97839594
00:18:51.800 --> 00:18:53.240 ability to go drive a
NOTE Confidence: 0.97839594
00:18:53.240 --> 00:18:54.780 vehicle at that moment.
NOTE Confidence: 0.9575525
00:18:55.160 --> 00:18:56.040 As you can see with
NOTE Confidence: 0.9575525
00:18:56.040 --> 00:18:57.560 oral dosing, that kinda kicks
NOTE Confidence: 0.9575525
00:18:57.560 --> 00:18:58.920 in about one hour post
NOTE Confidence: 0.9575525
00:18:58.920 --> 00:18:59.420 dosing.
NOTE Confidence: 0.9867214

00:18:59.720 --> 00:19:01.560 They remain less confident up
NOTE Confidence: 0.9867214

00:19:01.560 --> 00:19:03.105 until about four hours, and
NOTE Confidence: 0.9867214

00:19:03.105 --> 00:19:04.625 then it doesn't return back
NOTE Confidence: 0.9867214

00:19:04.625 --> 00:19:05.984 to baseline till about eight
NOTE Confidence: 0.9867214

00:19:05.984 --> 00:19:07.125 hours after dosing.
NOTE Confidence: 0.9660723

00:19:07.905 --> 00:19:08.645 With inhalation,
NOTE Confidence: 0.99946165

00:19:08.945 --> 00:19:10.965 the peak is is almost
NOTE Confidence: 0.99946165

00:19:11.025 --> 00:19:11.525 immediate
NOTE Confidence: 0.9807394

00:19:12.305 --> 00:19:13.984 and is sustained for about
NOTE Confidence: 0.9807394

00:19:13.984 --> 00:19:14.785 an hour and a half
NOTE Confidence: 0.9807394

00:19:14.785 --> 00:19:16.244 to two hours post dosing.
NOTE Confidence: 0.96339417

00:19:17.549 --> 00:19:19.630 And, again, not much difference
NOTE Confidence: 0.96339417

00:19:19.630 --> 00:19:21.570 between twenty and forty milligrams
NOTE Confidence: 0.96339417

00:19:21.630 --> 00:19:23.150 of delta eight with a
NOTE Confidence: 0.96339417

00:19:23.150 --> 00:19:24.590 vaporization, but we do see
NOTE Confidence: 0.96339417

00:19:24.590 --> 00:19:25.090 that

NOTE Confidence: 0.9010495
00:19:25.789 --> 00:19:27.390 bigger separation of dose with
NOTE Confidence: 0.9010495
00:19:27.390 --> 00:19:28.289 oral dose.
NOTE Confidence: 0.9554972
00:19:30.005 --> 00:19:31.684 When we look at our
NOTE Confidence: 0.9554972
00:19:31.684 --> 00:19:32.184 objective
NOTE Confidence: 0.8665023
00:19:32.484 --> 00:19:34.965 measures of cognitive performance starting
NOTE Confidence: 0.8665023
00:19:34.965 --> 00:19:36.884 with the the DRUID global
NOTE Confidence: 0.8665023
00:19:36.884 --> 00:19:38.024 impairment score,
NOTE Confidence: 0.81576854
00:19:39.445 --> 00:19:41.460 what's interesting is while subjective
NOTE Confidence: 0.98499537
00:19:41.940 --> 00:19:44.119 drug effect ratings were qualitatively
NOTE Confidence: 0.9996373
00:19:44.500 --> 00:19:45.880 higher for vaporization
NOTE Confidence: 0.99784356
00:19:46.260 --> 00:19:47.619 than they were for oral
NOTE Confidence: 0.99784356
00:19:47.619 --> 00:19:48.119 dosing,
NOTE Confidence: 0.8587426
00:19:50.740 --> 00:19:52.419 we see kind of
NOTE Confidence: 0.9710194
00:19:53.220 --> 00:19:54.179 they they get a little
NOTE Confidence: 0.9710194
00:19:54.179 --> 00:19:56.020 more equaled out. I do
NOTE Confidence: 0.9710194

00:19:56.020 --> 00:19:57.915 wanna mention that there's a
NOTE Confidence: 0.9710194

00:19:57.915 --> 00:19:59.775 lot of the same participants
NOTE Confidence: 0.9955278

00:20:00.155 --> 00:20:01.915 participated in both oral and
NOTE Confidence: 0.9955278

00:20:01.915 --> 00:20:02.415 vaporized
NOTE Confidence: 0.97998255

00:20:02.715 --> 00:20:03.215 studies.
NOTE Confidence: 0.98337924

00:20:03.995 --> 00:20:06.095 It's not the same people.
NOTE Confidence: 0.98337924

00:20:06.235 --> 00:20:07.435 So I think in this
NOTE Confidence: 0.98337924

00:20:07.755 --> 00:20:09.295 these first two experiments,
NOTE Confidence: 0.9911198

00:20:10.130 --> 00:20:11.110 I think thirteen
NOTE Confidence: 0.99686414

00:20:11.810 --> 00:20:13.670 of the nineteen to twenty,
NOTE Confidence: 0.9726162

00:20:14.690 --> 00:20:17.010 participants were identical in in
NOTE Confidence: 0.9726162

00:20:17.010 --> 00:20:18.869 both sub both experiments,
NOTE Confidence: 0.98594433

00:20:19.490 --> 00:20:20.690 but we had five or
NOTE Confidence: 0.98594433

00:20:20.690 --> 00:20:22.390 six people who were unique
NOTE Confidence: 0.98594433

00:20:22.625 --> 00:20:24.225 to each experiment. That may
NOTE Confidence: 0.98594433

00:20:24.225 --> 00:20:25.665 explain the difference in in

NOTE Confidence: 0.98594433
00:20:25.665 --> 00:20:27.505 the peak magnitude across these
NOTE Confidence: 0.98594433
00:20:27.505 --> 00:20:28.005 things.
NOTE Confidence: 0.9633064
00:20:28.865 --> 00:20:29.685 But, again,
NOTE Confidence: 0.99906933
00:20:30.305 --> 00:20:31.845 really nice dose orderliness
NOTE Confidence: 0.9553325
00:20:32.305 --> 00:20:34.225 with the oral dosing and
NOTE Confidence: 0.9553325
00:20:34.225 --> 00:20:36.065 no difference from placebo and
NOTE Confidence: 0.9553325
00:20:36.065 --> 00:20:37.285 cognitive performance
NOTE Confidence: 0.9700982
00:20:37.909 --> 00:20:39.029 with the ten or twenty
NOTE Confidence: 0.9700982
00:20:39.029 --> 00:20:41.529 milligram doses of delta eight.
NOTE Confidence: 0.99849176
00:20:41.909 --> 00:20:43.990 But the forty milligram dose
NOTE Confidence: 0.99849176
00:20:43.990 --> 00:20:46.250 of delta eight was comparable
NOTE Confidence: 0.99849176
00:20:46.309 --> 00:20:47.990 to the twenty milligram dose
NOTE Confidence: 0.99849176
00:20:47.990 --> 00:20:49.190 of delta nine and was
NOTE Confidence: 0.99849176
00:20:49.190 --> 00:20:49.690 significantly
NOTE Confidence: 0.99281263
00:20:50.149 --> 00:20:51.369 different from placebo.
NOTE Confidence: 0.9669781

00:20:52.405 --> 00:20:53.705 Same thing with the vaporization.
NOTE Confidence: 0.97261834

00:20:54.565 --> 00:20:55.925 Although, we do see a
NOTE Confidence: 0.97261834

00:20:55.925 --> 00:20:57.305 little bit more difference
NOTE Confidence: 0.99256474

00:20:58.005 --> 00:20:59.445 with the lower doses of
NOTE Confidence: 0.99256474

00:20:59.445 --> 00:21:00.825 delta eight. So, again,
NOTE Confidence: 0.91632515

00:21:01.205 --> 00:21:03.045 that subjective ratings where they're
NOTE Confidence: 0.91632515

00:21:03.045 --> 00:21:04.645 feeling more a higher drug
NOTE Confidence: 0.91632515

00:21:04.645 --> 00:21:06.025 effect, they're also showing
NOTE Confidence: 0.983758

00:21:06.359 --> 00:21:07.800 impairment at lower doses with
NOTE Confidence: 0.983758

00:21:07.800 --> 00:21:08.300 vaporization.
NOTE Confidence: 0.9606711

00:21:09.720 --> 00:21:10.600 When we look at the
NOTE Confidence: 0.9606711

00:21:10.600 --> 00:21:12.520 PACE serial addition task, again,
NOTE Confidence: 0.9606711

00:21:12.520 --> 00:21:13.980 this is a an evaluation
NOTE Confidence: 0.983068

00:21:14.359 --> 00:21:16.540 of of working memory performance.
NOTE Confidence: 0.99133193

00:21:17.320 --> 00:21:19.160 With oral dosing, again, ten
NOTE Confidence: 0.99133193

00:21:19.160 --> 00:21:20.760 and twenty milligrams of delta

NOTE Confidence: 0.99133193
00:21:20.760 --> 00:21:21.605 eight are not showing much
NOTE Confidence: 0.99133193
00:21:21.605 --> 00:21:22.984 difference from placebo,
NOTE Confidence: 0.99755526
00:21:23.525 --> 00:21:24.965 but the forty milligrams of
NOTE Confidence: 0.99755526
00:21:24.965 --> 00:21:26.405 delta eight is really showing
NOTE Confidence: 0.99755526
00:21:26.405 --> 00:21:28.005 the same level of impairment
NOTE Confidence: 0.99755526
00:21:28.005 --> 00:21:29.445 as the twenty milligrams of
NOTE Confidence: 0.99755526
00:21:29.445 --> 00:21:30.805 delta nine, and that's different
NOTE Confidence: 0.99755526
00:21:30.805 --> 00:21:31.545 from placebo.
NOTE Confidence: 0.997475
00:21:32.565 --> 00:21:33.305 With vaporization,
NOTE Confidence: 0.98733795
00:21:34.085 --> 00:21:36.025 less impairment is being noted.
NOTE Confidence: 0.93724614
00:21:36.490 --> 00:21:37.789 And, actually, here,
NOTE Confidence: 0.997493
00:21:38.169 --> 00:21:38.669 qualitatively,
NOTE Confidence: 0.8852806
00:21:39.130 --> 00:21:40.990 we're seeing a a qualitatively
NOTE Confidence: 0.9820142
00:21:41.369 --> 00:21:43.289 greater impairment of functioning with
NOTE Confidence: 0.9820142
00:21:43.289 --> 00:21:44.890 the forty milligrams of delta
NOTE Confidence: 0.9820142

00:21:44.890 --> 00:21:46.350 eight than the twenty milligrams

NOTE Confidence: 0.9820142

00:21:46.409 --> 00:21:47.710 of delta nine THC.

NOTE Confidence: 0.99186957

00:21:49.605 --> 00:21:50.105 Cardiovascular

NOTE Confidence: 0.79639494

00:21:50.645 --> 00:21:51.145 effects,

NOTE Confidence: 0.997968

00:21:52.484 --> 00:21:54.244 are are interesting and follow

NOTE Confidence: 0.997968

00:21:54.244 --> 00:21:55.545 a similar pattern

NOTE Confidence: 0.9559605

00:21:56.085 --> 00:21:56.585 to,

NOTE Confidence: 0.99821514

00:21:57.365 --> 00:21:59.465 the cognitive performance effects

NOTE Confidence: 0.823428

00:22:00.165 --> 00:22:00.984 in that,

NOTE Confidence: 0.99301094

00:22:02.309 --> 00:22:03.990 the forty milligrams of delta

NOTE Confidence: 0.99301094

00:22:03.990 --> 00:22:05.910 eight show a significant change

NOTE Confidence: 0.99301094

00:22:05.910 --> 00:22:07.929 from baseline and are comparable

NOTE Confidence: 0.99301094

00:22:08.070 --> 00:22:08.570 to,

NOTE Confidence: 0.9992998

00:22:09.270 --> 00:22:10.950 twenty milligrams of delta nine

NOTE Confidence: 0.9992998

00:22:10.950 --> 00:22:11.450 THC

NOTE Confidence: 0.9477179

00:22:12.390 --> 00:22:14.230 across these two. And then,

NOTE Confidence: 0.9477179
00:22:14.230 --> 00:22:14.730 again,
NOTE Confidence: 0.7671987
00:22:15.030 --> 00:22:15.609 a stronger
NOTE Confidence: 0.998604
00:22:16.585 --> 00:22:18.685 cardiovascular effect with vaporization
NOTE Confidence: 0.9334433
00:22:18.985 --> 00:22:20.505 versus oral dosing where the
NOTE Confidence: 0.9334433
00:22:20.505 --> 00:22:21.945 two lower doses of delta
NOTE Confidence: 0.9334433
00:22:21.945 --> 00:22:22.605 A THC
NOTE Confidence: 0.9523659
00:22:23.065 --> 00:22:24.925 really aren't different from placebo.
NOTE Confidence: 0.99446636
00:22:28.025 --> 00:22:30.090 Now where things get really
NOTE Confidence: 0.99446636
00:22:30.090 --> 00:22:31.450 interesting and where we try
NOTE Confidence: 0.99446636
00:22:31.450 --> 00:22:33.150 to start to understand so
NOTE Confidence: 0.98303264
00:22:33.450 --> 00:22:34.270 on the pharmacodynamic
NOTE Confidence: 0.99902725
00:22:35.130 --> 00:22:37.130 side, we're seeing things that
NOTE Confidence: 0.99902725
00:22:37.130 --> 00:22:38.830 look to show that
NOTE Confidence: 0.9969933
00:22:39.369 --> 00:22:41.369 delta eight THC is about
NOTE Confidence: 0.9969933
00:22:41.369 --> 00:22:42.890 half as potent as delta
NOTE Confidence: 0.9969933

00:22:42.890 --> 00:22:43.630 nine THC.
NOTE Confidence: 0.9969658

00:22:44.535 --> 00:22:45.415 And so when you look
NOTE Confidence: 0.9969658

00:22:45.415 --> 00:22:46.155 at preclinical,
NOTE Confidence: 0.9649426

00:22:47.175 --> 00:22:49.355 CB one receptor binding data,
NOTE Confidence: 0.99921936

00:22:49.975 --> 00:22:51.015 there's a little bit of
NOTE Confidence: 0.99921936

00:22:51.015 --> 00:22:52.775 a signal that delta nine
NOTE Confidence: 0.99921936

00:22:52.775 --> 00:22:53.275 THC
NOTE Confidence: 0.99736685

00:22:53.735 --> 00:22:55.255 can bind a little bit
NOTE Confidence: 0.99736685

00:22:55.255 --> 00:22:55.755 more
NOTE Confidence: 0.9671532

00:22:56.135 --> 00:22:57.815 effectively at CB one than
NOTE Confidence: 0.9671532

00:22:57.815 --> 00:22:59.755 delta eight THC, but the
NOTE Confidence: 0.9961963

00:23:00.109 --> 00:23:02.050 the KIs are not terribly
NOTE Confidence: 0.9961963

00:23:02.190 --> 00:23:02.690 different.
NOTE Confidence: 0.9957552

00:23:03.150 --> 00:23:03.890 And so
NOTE Confidence: 0.98824954

00:23:04.190 --> 00:23:05.250 what else could,
NOTE Confidence: 0.9995965

00:23:06.270 --> 00:23:08.609 be driving this differential potency

NOTE Confidence: 0.9993809
00:23:09.150 --> 00:23:09.970 at the pharmacodynamic
NOTE Confidence: 0.9864376
00:23:10.590 --> 00:23:11.090 level?
NOTE Confidence: 0.96786773
00:23:11.550 --> 00:23:12.050 And,
NOTE Confidence: 0.9992733
00:23:12.830 --> 00:23:14.690 when you look at parent
NOTE Confidence: 0.9451031
00:23:15.445 --> 00:23:17.465 concentrations of these two molecules,
NOTE Confidence: 0.9451031
00:23:17.605 --> 00:23:19.465 so is it a differential
NOTE Confidence: 0.9451031
00:23:19.685 --> 00:23:20.185 absorption
NOTE Confidence: 0.9827586
00:23:20.565 --> 00:23:21.465 of the drug?
NOTE Confidence: 0.99928916
00:23:22.165 --> 00:23:23.945 So with oral dosing,
NOTE Confidence: 0.99913883
00:23:25.445 --> 00:23:27.305 we're looking at ten milligrams,
NOTE Confidence: 0.97123903
00:23:29.600 --> 00:23:31.540 twenty milligrams, and forty milligrams
NOTE Confidence: 0.97123903
00:23:31.600 --> 00:23:33.440 of delta eight THC in
NOTE Confidence: 0.97123903
00:23:33.440 --> 00:23:34.560 whole blood on the left
NOTE Confidence: 0.97123903
00:23:34.560 --> 00:23:35.680 hand panel. And this is
NOTE Confidence: 0.97123903
00:23:35.680 --> 00:23:37.540 just delta eight THC
NOTE Confidence: 0.9335435

00:23:37.840 --> 00:23:40.020 concentration in nanograms per milliliter.

NOTE Confidence: 0.98372173

00:23:40.720 --> 00:23:42.740 This is beautifully dose orderly.

NOTE Confidence: 0.9895446

00:23:43.184 --> 00:23:44.644 So, again, pharmacodynamically,

NOTE Confidence: 0.9991711

00:23:45.424 --> 00:23:47.205 we had beautiful dose orderliness

NOTE Confidence: 0.820462

00:23:47.904 --> 00:23:49.264 with the delta eight THC

NOTE Confidence: 0.820462

00:23:49.264 --> 00:23:49.764 pharmacodynamic

NOTE Confidence: 0.9895085

00:23:50.225 --> 00:23:52.005 response, and that maps on

NOTE Confidence: 0.9895085

00:23:52.065 --> 00:23:53.424 perfectly to what we're seeing

NOTE Confidence: 0.9895085

00:23:53.424 --> 00:23:55.020 with the parent drug in

NOTE Confidence: 0.996015

00:23:55.980 --> 00:23:56.720 blood. Importantly,

NOTE Confidence: 0.9996531

00:23:57.180 --> 00:23:58.000 with placebo

NOTE Confidence: 0.98114955

00:23:58.300 --> 00:24:00.300 and delta nine THC dosing,

NOTE Confidence: 0.98114955

00:24:00.300 --> 00:24:01.840 we're not seeing any conversion.

NOTE Confidence: 0.98114955

00:24:01.900 --> 00:24:02.940 So when we're giving the

NOTE Confidence: 0.98114955

00:24:02.940 --> 00:24:04.780 delta nine THC dose, we

NOTE Confidence: 0.98114955

00:24:04.780 --> 00:24:06.220 don't see delta eight THC.

NOTE Confidence: 0.98114955
00:24:06.220 --> 00:24:06.960 And similarly,
NOTE Confidence: 0.95494926
00:24:07.625 --> 00:24:08.744 in the right hand panel,
NOTE Confidence: 0.95494926
00:24:08.744 --> 00:24:10.105 when you were looking and
NOTE Confidence: 0.95494926
00:24:10.105 --> 00:24:11.805 detecting delta nine THC,
NOTE Confidence: 0.98126096
00:24:12.345 --> 00:24:13.625 we're not seeing any delta
NOTE Confidence: 0.98126096
00:24:13.625 --> 00:24:15.085 eight. So there's no contamination
NOTE Confidence: 0.99846953
00:24:15.465 --> 00:24:16.845 of our drug products.
NOTE Confidence: 0.9967609
00:24:17.385 --> 00:24:18.685 We got good purity.
NOTE Confidence: 0.98999316
00:24:19.625 --> 00:24:20.744 And then when we look,
NOTE Confidence: 0.98999316
00:24:20.744 --> 00:24:22.410 these are two twenty milligram
NOTE Confidence: 0.98999316
00:24:22.470 --> 00:24:23.850 doses, and the peak
NOTE Confidence: 0.9958454
00:24:24.230 --> 00:24:25.910 is about five nanograms per
NOTE Confidence: 0.9958454
00:24:25.910 --> 00:24:27.510 milliliter for delta eight and
NOTE Confidence: 0.9958454
00:24:27.510 --> 00:24:28.950 about three and a half
NOTE Confidence: 0.9958454
00:24:28.950 --> 00:24:31.210 to four for delta nine.
NOTE Confidence: 0.9958454

00:24:31.430 --> 00:24:32.730 So we're seeing qualitatively
NOTE Confidence: 0.99836737

00:24:33.270 --> 00:24:34.950 stronger drug effects with delta
NOTE Confidence: 0.99836737

00:24:34.950 --> 00:24:35.450 nine
NOTE Confidence: 0.9962656

00:24:36.154 --> 00:24:38.395 about the same parent drug
NOTE Confidence: 0.9962656

00:24:38.395 --> 00:24:40.154 concentration, maybe a little bit
NOTE Confidence: 0.9962656

00:24:40.154 --> 00:24:40.654 less.
NOTE Confidence: 0.9862256

00:24:41.595 --> 00:24:43.195 Where things get fascinating is
NOTE Confidence: 0.9862256

00:24:43.195 --> 00:24:43.994 when we look at the
NOTE Confidence: 0.9862256

00:24:43.994 --> 00:24:46.234 eleven hydroxy metabolite. So, again,
NOTE Confidence: 0.9862256

00:24:46.234 --> 00:24:48.255 this is oral dosing only.
NOTE Confidence: 0.9890924

00:24:49.529 --> 00:24:50.809 We see a little bit
NOTE Confidence: 0.9890924

00:24:50.809 --> 00:24:52.809 less dose orderliness here for
NOTE Confidence: 0.9890924

00:24:52.809 --> 00:24:54.730 delta eight. So from ten
NOTE Confidence: 0.9890924

00:24:54.730 --> 00:24:56.490 to twenty milligrams, we see
NOTE Confidence: 0.9890924

00:24:56.490 --> 00:24:58.429 that doubling of the concentration
NOTE Confidence: 0.99231404

00:24:58.730 --> 00:25:00.490 curve, but we don't see

NOTE Confidence: 0.99231404
00:25:00.490 --> 00:25:02.169 it double again going from
NOTE Confidence: 0.99231404
00:25:02.169 --> 00:25:03.685 twenty to forty milligrams. We
NOTE Confidence: 0.99231404
00:25:03.685 --> 00:25:05.045 only see a fifty percent
NOTE Confidence: 0.99231404
00:25:05.045 --> 00:25:06.265 increase in the peak,
NOTE Confidence: 0.9994151
00:25:06.645 --> 00:25:08.325 and the peak gets pushed
NOTE Confidence: 0.9994151
00:25:08.325 --> 00:25:08.825 over
NOTE Confidence: 0.9993136
00:25:09.285 --> 00:25:10.565 to the right by one
NOTE Confidence: 0.9993136
00:25:10.565 --> 00:25:11.065 hour.
NOTE Confidence: 0.9829359
00:25:11.525 --> 00:25:13.685 So the metabolic curve is
NOTE Confidence: 0.9829359
00:25:13.685 --> 00:25:15.065 changing with dose.
NOTE Confidence: 0.99977773
00:25:15.525 --> 00:25:16.565 And when you look at
NOTE Confidence: 0.99977773
00:25:16.565 --> 00:25:17.305 the concentration
NOTE Confidence: 0.9879259
00:25:17.685 --> 00:25:20.410 of delta nine eleven hydroxy,
NOTE Confidence: 0.9991385
00:25:21.350 --> 00:25:22.410 it's double
NOTE Confidence: 0.9925839
00:25:22.869 --> 00:25:24.230 what you have for the
NOTE Confidence: 0.9925839

00:25:24.230 --> 00:25:26.150 eleven hydroxy delta eight at
NOTE Confidence: 0.9925839

00:25:26.150 --> 00:25:27.530 the same dose.
NOTE Confidence: 0.99335027

00:25:27.910 --> 00:25:29.690 So twenty milligrams of delta
NOTE Confidence: 0.99335027

00:25:29.750 --> 00:25:31.590 e is resulting in half
NOTE Confidence: 0.99335027

00:25:31.590 --> 00:25:32.250 the concentration
NOTE Confidence: 0.94420505

00:25:33.125 --> 00:25:35.125 of the eleven hydroxy delta
NOTE Confidence: 0.94420505

00:25:35.125 --> 00:25:36.425 nine at twenty milligrams.
NOTE Confidence: 0.9849058

00:25:37.125 --> 00:25:38.885 And as you know, eleven
NOTE Confidence: 0.9849058

00:25:38.885 --> 00:25:39.385 hydroxy
NOTE Confidence: 0.99952406

00:25:39.765 --> 00:25:40.825 is a psychoactive
NOTE Confidence: 0.9890756

00:25:41.285 --> 00:25:43.225 metabolite of the parent molecule
NOTE Confidence: 0.9890756

00:25:43.285 --> 00:25:44.405 for both delta eight and
NOTE Confidence: 0.9890756

00:25:44.405 --> 00:25:45.305 delta nine,
NOTE Confidence: 0.9657748

00:25:45.605 --> 00:25:47.045 and this is likely where
NOTE Confidence: 0.9657748

00:25:47.045 --> 00:25:49.020 we're getting that differential pharmaco
NOTE Confidence: 0.9657748

00:25:49.100 --> 00:25:50.940 pharmacodynamic effect between the two

NOTE Confidence: 0.9657748
00:25:50.940 --> 00:25:51.440 drugs.
NOTE Confidence: 0.95314157
00:25:52.060 --> 00:25:52.960 And, similarly,
NOTE Confidence: 0.97341347
00:25:53.740 --> 00:25:54.480 we're getting,
NOTE Confidence: 0.99940383
00:25:56.140 --> 00:25:56.640 double
NOTE Confidence: 0.9987418
00:25:57.260 --> 00:25:58.400 the carboxy
NOTE Confidence: 0.9975414
00:25:58.780 --> 00:26:00.780 inactive metabolite for delta eight
NOTE Confidence: 0.9975414
00:26:00.780 --> 00:26:01.900 than we are for delta
NOTE Confidence: 0.9975414
00:26:01.900 --> 00:26:02.355 nine.
NOTE Confidence: 0.989203
00:26:02.915 --> 00:26:03.415 So,
NOTE Confidence: 0.9479378
00:26:03.955 --> 00:26:04.934 on a pharmacokinetic
NOTE Confidence: 0.9994006
00:26:06.035 --> 00:26:06.535 level,
NOTE Confidence: 0.9988295
00:26:07.635 --> 00:26:09.734 the liver is metabolizing
NOTE Confidence: 0.9629816
00:26:10.355 --> 00:26:12.355 these two drugs differently even
NOTE Confidence: 0.9629816
00:26:12.355 --> 00:26:14.695 though they're chemically nearly identical,
NOTE Confidence: 0.9996267
00:26:15.510 --> 00:26:16.490 and that's resulting
NOTE Confidence: 0.89130664

00:26:17.030 --> 00:26:18.630 most likely in in is
NOTE Confidence: 0.89130664

00:26:18.630 --> 00:26:20.150 the main driver of these
NOTE Confidence: 0.89130664

00:26:20.150 --> 00:26:21.210 differential pharmacodynamic
NOTE Confidence: 0.9977511

00:26:21.750 --> 00:26:22.250 effects.
NOTE Confidence: 0.9713166

00:26:22.869 --> 00:26:24.170 When we look at,
NOTE Confidence: 0.99813575

00:26:24.950 --> 00:26:25.450 vaporization,
NOTE Confidence: 0.9834618

00:26:26.710 --> 00:26:28.230 what's interesting here is a
NOTE Confidence: 0.9834618

00:26:28.230 --> 00:26:29.609 couple things of note.
NOTE Confidence: 0.99978983

00:26:30.195 --> 00:26:30.695 Again,
NOTE Confidence: 0.99939156

00:26:31.075 --> 00:26:33.255 two twenty milligram doses
NOTE Confidence: 0.99823195

00:26:34.034 --> 00:26:35.734 are resulting in identical
NOTE Confidence: 0.9736825

00:26:36.674 --> 00:26:38.615 time course and peak concentrations
NOTE Confidence: 0.9822429

00:26:39.154 --> 00:26:40.355 in whole blood of the
NOTE Confidence: 0.9822429

00:26:40.355 --> 00:26:41.335 parent drug.
NOTE Confidence: 0.9653683

00:26:41.955 --> 00:26:42.695 But, again,
NOTE Confidence: 0.9965313

00:26:43.250 --> 00:26:45.430 we're not seeing what what's

NOTE Confidence: 0.9965313
00:26:45.490 --> 00:26:46.930 a little bit different from
NOTE Confidence: 0.9965313
00:26:46.930 --> 00:26:48.210 the oral dosing is we
NOTE Confidence: 0.9965313
00:26:48.210 --> 00:26:48.710 see
NOTE Confidence: 0.952169
00:26:49.410 --> 00:26:51.010 almost doubling from ten to
NOTE Confidence: 0.952169
00:26:51.010 --> 00:26:53.170 twenty milligrams of of parent
NOTE Confidence: 0.952169
00:26:53.170 --> 00:26:54.390 delta eight with inhalation.
NOTE Confidence: 0.9958278
00:26:54.930 --> 00:26:56.609 We don't see it quite
NOTE Confidence: 0.9958278
00:26:56.609 --> 00:26:58.710 there for, twenty to forty.
NOTE Confidence: 0.99065036
00:26:59.085 --> 00:27:00.605 So, again, this suggests that
NOTE Confidence: 0.99065036
00:27:00.605 --> 00:27:01.565 there's a little bit of
NOTE Confidence: 0.99065036
00:27:01.565 --> 00:27:02.145 a titration,
NOTE Confidence: 0.99513507
00:27:02.765 --> 00:27:03.725 maybe a little bit of
NOTE Confidence: 0.99513507
00:27:03.725 --> 00:27:04.784 a faster metabolism,
NOTE Confidence: 0.9976687
00:27:06.524 --> 00:27:07.965 but something with the drug
NOTE Confidence: 0.9976687
00:27:07.965 --> 00:27:09.984 absorption and and and clearance
NOTE Confidence: 0.9976687

00:27:10.125 --> 00:27:11.645 of of the parent drug
NOTE Confidence: 0.9976687

00:27:11.645 --> 00:27:13.565 with vaporization that explains that
NOTE Confidence: 0.9976687

00:27:13.565 --> 00:27:14.065 difference.
NOTE Confidence: 0.9478968

00:27:14.510 --> 00:27:16.350 We're also seeing much higher
NOTE Confidence: 0.9478968

00:27:16.350 --> 00:27:17.570 peak concentration.
NOTE Confidence: 0.9985986

00:27:17.950 --> 00:27:19.410 So, you know,
NOTE Confidence: 0.98365414

00:27:19.710 --> 00:27:22.210 twenty five to fifty milligrams
NOTE Confidence: 0.98365414

00:27:22.430 --> 00:27:24.350 of delta eight in whole
NOTE Confidence: 0.98365414

00:27:24.350 --> 00:27:26.510 blood versus with oral dosing,
NOTE Confidence: 0.98365414

00:27:26.510 --> 00:27:27.490 our peak drug
NOTE Confidence: 0.9500581

00:27:28.375 --> 00:27:30.475 plasma concentrations were at, like,
NOTE Confidence: 0.9987666

00:27:30.775 --> 00:27:31.275 five.
NOTE Confidence: 0.9383356

00:27:31.975 --> 00:27:34.154 So, again, those higher pharmacodynamical
NOTE Confidence: 0.9499108

00:27:34.695 --> 00:27:37.414 levels likely driven by higher
NOTE Confidence: 0.9499108

00:27:37.414 --> 00:27:39.095 bolus exposure to the parent
NOTE Confidence: 0.9499108

00:27:39.095 --> 00:27:39.994 drug in blood.

NOTE Confidence: 0.98778397
00:27:41.080 --> 00:27:42.359 When we look at the
NOTE Confidence: 0.98778397
00:27:42.359 --> 00:27:43.820 eleven hydroxy metabolite,
NOTE Confidence: 0.9778752
00:27:45.879 --> 00:27:48.039 we see that doubling at
NOTE Confidence: 0.9778752
00:27:48.039 --> 00:27:49.799 the same twenty milligram dose.
NOTE Confidence: 0.9778752
00:27:49.799 --> 00:27:50.779 It's about one
NOTE Confidence: 0.8804377
00:27:51.080 --> 00:27:52.940 nanogram per mil with vaporization.
NOTE Confidence: 0.97930694
00:27:53.799 --> 00:27:55.580 It's about two for,
NOTE Confidence: 0.9977567
00:27:56.494 --> 00:27:57.635 the delta nine.
NOTE Confidence: 0.9995222
00:27:58.095 --> 00:27:58.595 So
NOTE Confidence: 0.9668281
00:27:59.295 --> 00:28:00.815 twenty milligrams of delta nine
NOTE Confidence: 0.9668281
00:28:00.815 --> 00:28:02.435 gives you equal drug concentrations
NOTE Confidence: 0.9668281
00:28:02.494 --> 00:28:03.935 as forty milligrams of delta
NOTE Confidence: 0.9668281
00:28:03.935 --> 00:28:04.435 eight.
NOTE Confidence: 0.9838377
00:28:04.895 --> 00:28:06.095 The time course is a
NOTE Confidence: 0.9838377
00:28:06.095 --> 00:28:07.535 little bit different too. So
NOTE Confidence: 0.9838377

00:28:07.535 --> 00:28:08.815 you can see the delta
NOTE Confidence: 0.9838377

00:28:08.815 --> 00:28:10.755 nine eleven hydroxy metabolite
NOTE Confidence: 0.9790859

00:28:11.830 --> 00:28:13.190 lingering a little bit longer
NOTE Confidence: 0.9790859

00:28:13.190 --> 00:28:14.390 than the delta eight where
NOTE Confidence: 0.9790859

00:28:14.390 --> 00:28:15.750 you see a more rapid
NOTE Confidence: 0.9790859

00:28:15.750 --> 00:28:16.250 reduction.
NOTE Confidence: 0.9668252

00:28:16.790 --> 00:28:18.410 And so, again, that's likely
NOTE Confidence: 0.9668252

00:28:18.470 --> 00:28:20.070 contributing to the stronger or
NOTE Confidence: 0.9668252

00:28:20.070 --> 00:28:21.290 longer lasting pharmacodynamic
NOTE Confidence: 0.9943026

00:28:22.070 --> 00:28:22.570 effects.
NOTE Confidence: 0.98858

00:28:23.030 --> 00:28:24.230 And then similar to the
NOTE Confidence: 0.98858

00:28:24.230 --> 00:28:25.590 oral dosing, we see higher
NOTE Confidence: 0.98858

00:28:25.590 --> 00:28:26.705 levels the carboxymetabolite
NOTE Confidence: 0.98905164

00:28:27.404 --> 00:28:28.924 with delta eight versus delta
NOTE Confidence: 0.98905164

00:28:28.924 --> 00:28:29.424 nine.
NOTE Confidence: 0.998868

00:28:31.085 --> 00:28:31.585 So

NOTE Confidence: 0.9840343

00:28:32.125 --> 00:28:33.484 I mentioned a little bit,

NOTE Confidence: 0.9840343

00:28:33.484 --> 00:28:35.005 are they titrating? What do

NOTE Confidence: 0.9840343

00:28:35.005 --> 00:28:35.904 we see there?

NOTE Confidence: 0.9648986

00:28:37.085 --> 00:28:38.684 Tori Spindle, who's a colleague

NOTE Confidence: 0.9648986

00:28:38.684 --> 00:28:39.985 of mine here at Hopkins,

NOTE Confidence: 0.9648986

00:28:40.250 --> 00:28:41.850 trained under Tom Eisenberg at

NOTE Confidence: 0.9648986

00:28:41.850 --> 00:28:42.830 Virginia Commonwealth

NOTE Confidence: 0.958838

00:28:43.210 --> 00:28:43.710 University.

NOTE Confidence: 0.99367243

00:28:44.170 --> 00:28:45.450 And while they were there,

NOTE Confidence: 0.99367243

00:28:45.450 --> 00:28:47.610 they established a collaboration with,

NOTE Confidence: 0.99367243

00:28:48.010 --> 00:28:49.450 some scientists over at the

NOTE Confidence: 0.99367243

00:28:49.450 --> 00:28:51.150 American University of Beirut

NOTE Confidence: 0.8574355

00:28:51.690 --> 00:28:52.190 and

NOTE Confidence: 0.97063893

00:28:53.395 --> 00:28:55.575 worked on developing puff topography,

NOTE Confidence: 0.9994967

00:28:56.835 --> 00:28:59.075 equipment that is flexible across

NOTE Confidence: 0.9994967

00:28:59.075 --> 00:29:00.695 different methods of inhalation.

NOTE Confidence: 0.95831746

00:29:01.315 --> 00:29:02.195 And so what we were

NOTE Confidence: 0.95831746

00:29:02.195 --> 00:29:03.475 able to do in that

NOTE Confidence: 0.95831746

00:29:03.475 --> 00:29:05.395 first experiment where we use

NOTE Confidence: 0.95831746

00:29:05.395 --> 00:29:07.395 the handheld vaporizers, we're able

NOTE Confidence: 0.95831746

00:29:07.395 --> 00:29:09.529 to capture detailed puff topography

NOTE Confidence: 0.95831746

00:29:09.590 --> 00:29:10.090 metrics,

NOTE Confidence: 0.99261916

00:29:11.110 --> 00:29:12.650 while people were using,

NOTE Confidence: 0.9579593

00:29:13.029 --> 00:29:13.429 these,

NOTE Confidence: 0.9963815

00:29:13.990 --> 00:29:14.490 drugs.

NOTE Confidence: 0.99084127

00:29:15.190 --> 00:29:16.230 And what you can see

NOTE Confidence: 0.99084127

00:29:16.230 --> 00:29:18.150 is as the dose of

NOTE Confidence: 0.99084127

00:29:18.150 --> 00:29:19.529 delta eight THC

NOTE Confidence: 0.9985713

00:29:19.990 --> 00:29:20.490 increased,

NOTE Confidence: 0.9881749

00:29:21.235 --> 00:29:23.414 the average puff duration decreased.

NOTE Confidence: 0.9979226

00:29:24.914 --> 00:29:26.835 The flow rate remained the

NOTE Confidence: 0.9979226
00:29:26.835 --> 00:29:27.335 same.
NOTE Confidence: 0.99695814
00:29:28.674 --> 00:29:29.174 The
NOTE Confidence: 0.9820544
00:29:29.794 --> 00:29:31.975 total number of puffs increased,
NOTE Confidence: 0.9997435
00:29:32.995 --> 00:29:35.174 and the volume of air
NOTE Confidence: 0.9997435
00:29:35.235 --> 00:29:35.735 inhaled
NOTE Confidence: 0.9969362
00:29:36.280 --> 00:29:36.780 decreased.
NOTE Confidence: 0.999654
00:29:37.320 --> 00:29:38.440 So what people are doing
NOTE Confidence: 0.999654
00:29:38.440 --> 00:29:39.500 is they're exhibiting
NOTE Confidence: 0.99734163
00:29:39.880 --> 00:29:41.340 a little bit of titration
NOTE Confidence: 0.99734163
00:29:41.480 --> 00:29:42.540 based on dose.
NOTE Confidence: 0.99951464
00:29:43.000 --> 00:29:43.980 So they're taking
NOTE Confidence: 0.7589505
00:29:44.680 --> 00:29:45.180 shorter,
NOTE Confidence: 0.93916935
00:29:45.720 --> 00:29:47.660 kind of less intense puffs
NOTE Confidence: 0.93916935
00:29:47.800 --> 00:29:48.435 and a
NOTE Confidence: 0.958848
00:29:48.995 --> 00:29:51.175 a lower overall total volume
NOTE Confidence: 0.958848

00:29:51.235 --> 00:29:52.455 of air being,
NOTE Confidence: 0.9624678

00:29:53.235 --> 00:29:55.235 inhaled. So probably stretching out
NOTE Confidence: 0.9624678

00:29:55.235 --> 00:29:56.935 the exposure to the drug
NOTE Confidence: 0.9624678

00:29:57.155 --> 00:29:58.515 over that period of time,
NOTE Confidence: 0.9624678

00:29:58.515 --> 00:30:00.275 which may also explain why
NOTE Confidence: 0.9624678

00:30:00.275 --> 00:30:01.470 we see a little bit,
NOTE Confidence: 0.94238573

00:30:02.030 --> 00:30:03.570 more of a concentration,
NOTE Confidence: 0.86428046

00:30:04.110 --> 00:30:04.770 a less
NOTE Confidence: 0.76142824

00:30:05.150 --> 00:30:05.970 dose orderliness
NOTE Confidence: 0.9648674

00:30:06.830 --> 00:30:08.929 or less distance between doses
NOTE Confidence: 0.995846

00:30:09.309 --> 00:30:10.370 on both the pharmacokinetic
NOTE Confidence: 0.99861306

00:30:10.750 --> 00:30:11.409 and pharmacodynamic
NOTE Confidence: 0.99801064

00:30:11.870 --> 00:30:12.370 measures.
NOTE Confidence: 0.99870753

00:30:13.309 --> 00:30:15.010 And at the twenty milligram
NOTE Confidence: 0.99870753

00:30:15.230 --> 00:30:17.174 dose, we're seeing really no
NOTE Confidence: 0.99870753

00:30:17.174 --> 00:30:18.695 difference between delta eight and

NOTE Confidence: 0.99870753
00:30:18.695 --> 00:30:20.054 delta nine on that puff
NOTE Confidence: 0.99870753
00:30:20.054 --> 00:30:20.554 duration
NOTE Confidence: 0.90732574
00:30:21.335 --> 00:30:22.955 or on the inner puff,
NOTE Confidence: 0.8025607
00:30:24.695 --> 00:30:25.195 duration.
NOTE Confidence: 0.9952231
00:30:26.294 --> 00:30:27.894 We see a higher number
NOTE Confidence: 0.9952231
00:30:27.894 --> 00:30:29.255 of puffs for delta eight
NOTE Confidence: 0.9952231
00:30:29.255 --> 00:30:30.634 versus delta nine,
NOTE Confidence: 0.97536343
00:30:31.140 --> 00:30:32.820 and we see greater total
NOTE Confidence: 0.97536343
00:30:32.820 --> 00:30:34.500 inhaled volume for delta eight
NOTE Confidence: 0.97536343
00:30:34.500 --> 00:30:35.940 versus delta nine. So, again,
NOTE Confidence: 0.97536343
00:30:35.940 --> 00:30:36.740 a little bit of a
NOTE Confidence: 0.97536343
00:30:36.740 --> 00:30:37.240 titration
NOTE Confidence: 0.9992135
00:30:37.780 --> 00:30:39.700 based on the potency of
NOTE Confidence: 0.9992135
00:30:39.700 --> 00:30:41.480 the drug that's being administered.
NOTE Confidence: 0.99548745
00:30:43.275 --> 00:30:45.055 So moving on to,
NOTE Confidence: 0.98309994

00:30:45.915 --> 00:30:47.595 our next set of experiments.
NOTE Confidence: 0.98309994

00:30:47.595 --> 00:30:49.695 So, again, this followed sequentially.
NOTE Confidence: 0.98309994

00:30:49.915 --> 00:30:51.275 Right after we finished those
NOTE Confidence: 0.98309994

00:30:51.275 --> 00:30:52.875 first two experiments, we were
NOTE Confidence: 0.98309994

00:30:52.875 --> 00:30:54.015 interested because
NOTE Confidence: 0.9792147

00:30:54.475 --> 00:30:55.755 we didn't quite see the
NOTE Confidence: 0.9792147

00:30:55.755 --> 00:30:57.675 overall peak magnitude. We didn't
NOTE Confidence: 0.9792147

00:30:57.675 --> 00:30:59.039 see a a lot of
NOTE Confidence: 0.9792147

00:30:59.039 --> 00:31:01.120 very robust impairment of functioning
NOTE Confidence: 0.9792147

00:31:01.120 --> 00:31:02.480 at the even the forty
NOTE Confidence: 0.9792147

00:31:02.480 --> 00:31:04.260 milligram dose of delta eight.
NOTE Confidence: 0.9966075

00:31:04.640 --> 00:31:06.080 We were looking at those,
NOTE Confidence: 0.95996

00:31:06.559 --> 00:31:08.000 products that we purchased it
NOTE Confidence: 0.95996

00:31:08.000 --> 00:31:09.440 and evaluated, and we saw
NOTE Confidence: 0.95996

00:31:09.440 --> 00:31:10.720 doses as high as two
NOTE Confidence: 0.95996

00:31:10.720 --> 00:31:12.595 hundred, two hundred fifty milligrams

NOTE Confidence: 0.95996
00:31:12.735 --> 00:31:14.115 of of delta eight.
NOTE Confidence: 0.9995815
00:31:14.415 --> 00:31:14.915 Now
NOTE Confidence: 0.9831591
00:31:15.215 --> 00:31:16.835 given that that first experiment,
NOTE Confidence: 0.9831591
00:31:17.055 --> 00:31:18.335 we knew delta eight was
NOTE Confidence: 0.9831591
00:31:18.335 --> 00:31:19.695 about half as potent as
NOTE Confidence: 0.9831591
00:31:19.695 --> 00:31:20.195 delta
NOTE Confidence: 0.8885094
00:31:20.575 --> 00:31:21.235 nine. I
NOTE Confidence: 0.9990789
00:31:22.015 --> 00:31:23.775 didn't feel very comfortable trying
NOTE Confidence: 0.9990789
00:31:23.775 --> 00:31:24.595 to give people
NOTE Confidence: 0.842103
00:31:24.929 --> 00:31:26.309 four hundred, you know,
NOTE Confidence: 0.9759278
00:31:26.929 --> 00:31:28.450 two hundred milligrams of delta
NOTE Confidence: 0.9759278
00:31:28.450 --> 00:31:29.889 eight thinking that it was
NOTE Confidence: 0.9759278
00:31:29.889 --> 00:31:31.509 equivalent to a hundred milligrams
NOTE Confidence: 0.9759278
00:31:31.570 --> 00:31:32.710 of delta nine THC,
NOTE Confidence: 0.96383697
00:31:33.730 --> 00:31:34.549 to nontolerant
NOTE Confidence: 0.9952977

00:31:35.490 --> 00:31:36.470 users. So
NOTE Confidence: 0.9870121

00:31:36.865 --> 00:31:38.144 we thought filling in the
NOTE Confidence: 0.9870121

00:31:38.144 --> 00:31:39.985 dose response curve to thirty
NOTE Confidence: 0.9870121

00:31:39.985 --> 00:31:41.585 and sixty, so pushing that
NOTE Confidence: 0.9870121

00:31:41.585 --> 00:31:43.524 upper dose up twenty milligrams.
NOTE Confidence: 0.95337427

00:31:43.985 --> 00:31:45.105 And we had just finished
NOTE Confidence: 0.95337427

00:31:45.105 --> 00:31:46.385 an experiment where we had
NOTE Confidence: 0.95337427

00:31:46.385 --> 00:31:48.465 given thirty milligrams of delta
NOTE Confidence: 0.95337427

00:31:48.465 --> 00:31:49.985 nine t c acutely in
NOTE Confidence: 0.95337427

00:31:49.985 --> 00:31:50.965 the same vaporizer.
NOTE Confidence: 0.99696106

00:31:52.030 --> 00:31:53.390 So we felt we could
NOTE Confidence: 0.99696106

00:31:53.390 --> 00:31:54.670 do that safely in this
NOTE Confidence: 0.99696106

00:31:54.670 --> 00:31:55.170 population,
NOTE Confidence: 0.9953518

00:31:55.790 --> 00:31:57.230 and we felt pretty confident
NOTE Confidence: 0.9953518

00:31:57.230 --> 00:31:59.230 we'd get people pretty high
NOTE Confidence: 0.9953518

00:31:59.230 --> 00:32:00.290 and pretty intoxicated.

NOTE Confidence: 0.98010653
00:32:01.150 --> 00:32:02.350 And so what you can
NOTE Confidence: 0.98010653
00:32:02.350 --> 00:32:03.390 see here is this is
NOTE Confidence: 0.98010653
00:32:03.390 --> 00:32:05.570 subjective drug effect ratings again,
NOTE Confidence: 0.99563795
00:32:05.975 --> 00:32:07.255 and that's exactly what we
NOTE Confidence: 0.99563795
00:32:07.255 --> 00:32:08.855 did is is we pushed
NOTE Confidence: 0.99563795
00:32:08.855 --> 00:32:09.975 the dose up to the
NOTE Confidence: 0.99563795
00:32:09.975 --> 00:32:11.095 point where we're starting to
NOTE Confidence: 0.99563795
00:32:11.095 --> 00:32:12.295 hit the ceiling on overall
NOTE Confidence: 0.99563795
00:32:12.295 --> 00:32:13.755 magnitude of drug effects.
NOTE Confidence: 0.9659588
00:32:14.295 --> 00:32:15.815 We in all of our
NOTE Confidence: 0.9659588
00:32:15.815 --> 00:32:17.575 experiments, we've really not get
NOTE Confidence: 0.9659588
00:32:17.575 --> 00:32:19.175 an aggregate score of higher
NOTE Confidence: 0.9659588
00:32:19.175 --> 00:32:20.535 than eighty. There's always someone
NOTE Confidence: 0.9659588
00:32:20.535 --> 00:32:21.480 who's like, I've
NOTE Confidence: 0.98025966
00:32:21.960 --> 00:32:23.660 been higher before, but
NOTE Confidence: 0.9584826

00:32:24.120 --> 00:32:25.740 about half of our participants
NOTE Confidence: 0.9584826

00:32:25.799 --> 00:32:26.840 are capped out at a
NOTE Confidence: 0.9584826

00:32:26.840 --> 00:32:27.880 a rating of a hundred
NOTE Confidence: 0.9584826

00:32:27.880 --> 00:32:28.840 out of a hundred on
NOTE Confidence: 0.9584826

00:32:28.840 --> 00:32:30.120 this scale, and we're starting
NOTE Confidence: 0.9584826

00:32:30.120 --> 00:32:30.780 to see
NOTE Confidence: 0.97929734

00:32:31.400 --> 00:32:33.480 the emergence of unpleasant adverse
NOTE Confidence: 0.97929734

00:32:33.480 --> 00:32:34.919 effects. Remember, in those first
NOTE Confidence: 0.97929734

00:32:34.919 --> 00:32:36.360 two experiments, we didn't see
NOTE Confidence: 0.97929734

00:32:36.360 --> 00:32:37.934 anything higher than a total
NOTE Confidence: 0.97929734

00:32:37.934 --> 00:32:39.715 magnitude of about a five
NOTE Confidence: 0.98376864

00:32:40.015 --> 00:32:42.095 on this unpleasantness scale. Now
NOTE Confidence: 0.98376864

00:32:42.095 --> 00:32:43.375 we're getting up to about
NOTE Confidence: 0.98376864

00:32:43.375 --> 00:32:44.995 thirty with a thirty milligram
NOTE Confidence: 0.98376864

00:32:45.054 --> 00:32:46.174 dose of delta nine and
NOTE Confidence: 0.98376864

00:32:46.174 --> 00:32:47.455 a sixty milligram dose of

NOTE Confidence: 0.98376864

00:32:47.455 --> 00:32:49.215 delta eight. So that's kinda

NOTE Confidence: 0.98376864

00:32:49.215 --> 00:32:50.815 somewhere between twenty and thirty

NOTE Confidence: 0.98376864

00:32:50.815 --> 00:32:52.674 milligrams of delta nine, and

NOTE Confidence: 0.98376864

00:32:52.900 --> 00:32:54.340 forty and sixty milligrams of

NOTE Confidence: 0.98376864

00:32:54.340 --> 00:32:55.300 delta eight is where you

NOTE Confidence: 0.98376864

00:32:55.300 --> 00:32:57.140 push past the comfort level

NOTE Confidence: 0.98376864

00:32:57.140 --> 00:32:58.120 of most participants,

NOTE Confidence: 0.99825686

00:32:58.660 --> 00:33:00.040 most healthy adults.

NOTE Confidence: 0.9987766

00:33:01.540 --> 00:33:03.320 In terms of cognitive performance,

NOTE Confidence: 0.9458198

00:33:03.780 --> 00:33:05.640 we're seeing substantially more,

NOTE Confidence: 0.9424257

00:33:06.434 --> 00:33:08.514 robust impairment on the Druid

NOTE Confidence: 0.9424257

00:33:08.514 --> 00:33:09.014 application.

NOTE Confidence: 0.9917586

00:33:10.434 --> 00:33:10.934 Again,

NOTE Confidence: 0.9873097

00:33:11.235 --> 00:33:12.674 we're seeing that it's more

NOTE Confidence: 0.9873097

00:33:12.674 --> 00:33:14.115 sustained and a little bit

NOTE Confidence: 0.9873097

00:33:14.115 --> 00:33:14.615 more
NOTE Confidence: 0.9961348
00:33:15.075 --> 00:33:17.075 greater magnitude with oral dosing
NOTE Confidence: 0.9961348
00:33:17.075 --> 00:33:18.134 than with vaporization
NOTE Confidence: 0.93494576
00:33:19.220 --> 00:33:20.680 even though, subjectively,
NOTE Confidence: 0.9971891
00:33:21.060 --> 00:33:23.460 they reported stronger peak drug
NOTE Confidence: 0.9971891
00:33:23.460 --> 00:33:25.140 effects with vaporization than the
NOTE Confidence: 0.9971891
00:33:25.140 --> 00:33:25.960 oral dosing.
NOTE Confidence: 0.99978936
00:33:26.340 --> 00:33:27.560 I still don't quite
NOTE Confidence: 0.99967974
00:33:28.020 --> 00:33:30.340 understand that disconnect between the
NOTE Confidence: 0.99967974
00:33:30.340 --> 00:33:30.840 subjective
NOTE Confidence: 0.9999229
00:33:32.085 --> 00:33:32.585 intoxication
NOTE Confidence: 0.9377602
00:33:32.965 --> 00:33:34.745 and the impairment of functioning
NOTE Confidence: 0.9377602
00:33:34.804 --> 00:33:36.245 being kind of flipped between
NOTE Confidence: 0.9377602
00:33:36.245 --> 00:33:38.105 vape and and oral dosing,
NOTE Confidence: 0.99944085
00:33:38.565 --> 00:33:39.845 but it may relate to
NOTE Confidence: 0.99944085
00:33:39.845 --> 00:33:40.345 that

NOTE Confidence: 0.8619316
00:33:41.684 --> 00:33:42.184 pharmacokinetic
NOTE Confidence: 0.97010183
00:33:42.885 --> 00:33:44.885 difference and that higher level
NOTE Confidence: 0.97010183
00:33:44.885 --> 00:33:45.544 of the
NOTE Confidence: 0.9329638
00:33:46.340 --> 00:33:47.940 or different amount of the
NOTE Confidence: 0.9329638
00:33:47.940 --> 00:33:49.880 eleven hydroxy metabolite.
NOTE Confidence: 0.95800567
00:33:52.580 --> 00:33:53.080 Subjectively,
NOTE Confidence: 0.985434
00:33:53.620 --> 00:33:55.540 they reported being very impaired
NOTE Confidence: 0.985434
00:33:55.540 --> 00:33:56.900 and having low confidence in
NOTE Confidence: 0.985434
00:33:56.900 --> 00:33:58.500 their ability to drive across
NOTE Confidence: 0.985434
00:33:58.500 --> 00:33:59.480 all three doses.
NOTE Confidence: 0.931656
00:34:00.455 --> 00:34:02.235 Definitely different from placebo
NOTE Confidence: 0.953172
00:34:02.535 --> 00:34:04.155 in in all cases here.
NOTE Confidence: 0.9841335
00:34:04.535 --> 00:34:05.655 And then when we looked
NOTE Confidence: 0.9841335
00:34:05.655 --> 00:34:08.395 at actual simulated driving performance
NOTE Confidence: 0.9841335
00:34:08.455 --> 00:34:10.155 in that fancy driving simulator,
NOTE Confidence: 0.9845874

00:34:11.094 --> 00:34:12.375 I'm gonna show a couple
NOTE Confidence: 0.9845874

00:34:12.375 --> 00:34:13.575 things to you on on
NOTE Confidence: 0.9845874

00:34:13.575 --> 00:34:14.695 this slide that I think
NOTE Confidence: 0.9845874

00:34:14.695 --> 00:34:15.435 are important.
NOTE Confidence: 0.9532506

00:34:16.760 --> 00:34:18.140 One is that,
NOTE Confidence: 0.9657962

00:34:19.640 --> 00:34:21.719 this is a composite drive
NOTE Confidence: 0.9657962

00:34:21.719 --> 00:34:23.239 score that was developed by
NOTE Confidence: 0.9657962

00:34:23.239 --> 00:34:25.239 Austin Zamarripa and Tori Spindle,
NOTE Confidence: 0.9657962

00:34:25.239 --> 00:34:26.780 my colleagues here at Hopkins,
NOTE Confidence: 0.9977315

00:34:27.320 --> 00:34:28.600 based on a number of
NOTE Confidence: 0.9977315

00:34:28.600 --> 00:34:29.739 metrics that
NOTE Confidence: 0.9987605

00:34:30.305 --> 00:34:32.405 relate to overall driving performance.
NOTE Confidence: 0.9952756

00:34:33.665 --> 00:34:35.845 Included in this overall score
NOTE Confidence: 0.8590407

00:34:36.305 --> 00:34:36.805 is,
NOTE Confidence: 0.8460298

00:34:37.985 --> 00:34:39.765 deviation of lane position.
NOTE Confidence: 0.99961835

00:34:40.305 --> 00:34:41.285 It's the latency

NOTE Confidence: 0.9936993
00:34:41.585 --> 00:34:43.025 to break in a yellow
NOTE Confidence: 0.9936993
00:34:43.025 --> 00:34:44.710 light dilemma or in the
NOTE Confidence: 0.9936993
00:34:44.710 --> 00:34:46.390 instance of an object going
NOTE Confidence: 0.9936993
00:34:46.390 --> 00:34:47.190 out in front of the
NOTE Confidence: 0.9936993
00:34:47.190 --> 00:34:47.690 road.
NOTE Confidence: 0.99700135
00:34:48.150 --> 00:34:48.650 It's,
NOTE Confidence: 0.9998305
00:34:49.190 --> 00:34:49.850 the ability
NOTE Confidence: 0.9976034
00:34:50.150 --> 00:34:51.590 to follow a vehicle in
NOTE Confidence: 0.9976034
00:34:51.590 --> 00:34:53.030 front of you and keep
NOTE Confidence: 0.9976034
00:34:53.030 --> 00:34:53.770 the distance
NOTE Confidence: 0.9967056
00:34:54.470 --> 00:34:56.230 constant even though the vehicle
NOTE Confidence: 0.9967056
00:34:56.230 --> 00:34:57.830 in front is accelerating and
NOTE Confidence: 0.9967056
00:34:57.830 --> 00:34:58.330 decelerating.
NOTE Confidence: 0.9438481
00:34:59.225 --> 00:35:00.745 And so when they kinda
NOTE Confidence: 0.9438481
00:35:00.745 --> 00:35:01.965 rope all of those
NOTE Confidence: 0.9732883

00:35:02.265 --> 00:35:04.045 kinda key features together,
NOTE Confidence: 0.9976206

00:35:05.305 --> 00:35:07.485 this composite drive score
NOTE Confidence: 0.99024075

00:35:08.185 --> 00:35:09.085 is a numerical,
NOTE Confidence: 0.99941826

00:35:10.745 --> 00:35:11.885 reference of
NOTE Confidence: 0.9999701

00:35:12.330 --> 00:35:13.469 standard deviation
NOTE Confidence: 0.9997256

00:35:13.850 --> 00:35:15.469 change from the baseline
NOTE Confidence: 0.9996991

00:35:15.770 --> 00:35:17.950 performance for that particular driving
NOTE Confidence: 0.9996991

00:35:18.010 --> 00:35:18.510 session.
NOTE Confidence: 0.9995059

00:35:19.130 --> 00:35:20.410 So when you see a
NOTE Confidence: 0.9995059

00:35:20.410 --> 00:35:22.350 score of two here,
NOTE Confidence: 0.98967355

00:35:23.050 --> 00:35:24.910 that indicates that the performance
NOTE Confidence: 0.98967355

00:35:25.130 --> 00:35:26.915 for that person on the
NOTE Confidence: 0.98967355

00:35:26.915 --> 00:35:28.775 post drug exposure drive
NOTE Confidence: 0.99950236

00:35:29.555 --> 00:35:31.335 was two standard deviations
NOTE Confidence: 0.914742

00:35:31.715 --> 00:35:33.815 worse than that per particular
NOTE Confidence: 0.914742

00:35:34.035 --> 00:35:34.535 person

NOTE Confidence: 0.9991805
00:35:34.995 --> 00:35:36.675 on that day before they
NOTE Confidence: 0.9991805
00:35:36.675 --> 00:35:37.895 were given a drug.
NOTE Confidence: 0.99662936
00:35:38.790 --> 00:35:39.530 And so
NOTE Confidence: 0.97531307
00:35:39.910 --> 00:35:41.590 what I've highlighted here is
NOTE Confidence: 0.97531307
00:35:41.590 --> 00:35:43.050 this dotted line
NOTE Confidence: 0.9304424
00:35:44.230 --> 00:35:44.730 is
NOTE Confidence: 0.9640999
00:35:45.910 --> 00:35:48.230 using this metric on this
NOTE Confidence: 0.9640999
00:35:48.230 --> 00:35:50.890 driving simulator and these simulated
NOTE Confidence: 0.9640999
00:35:51.110 --> 00:35:51.610 drives.
NOTE Confidence: 0.9990923
00:35:52.310 --> 00:35:53.370 This is the
NOTE Confidence: 0.99864703
00:35:53.715 --> 00:35:55.555 rate of performance and the
NOTE Confidence: 0.99864703
00:35:55.555 --> 00:35:56.614 level of impairment
NOTE Confidence: 0.9889236
00:35:57.315 --> 00:35:59.475 that healthy adults showed when
NOTE Confidence: 0.9889236
00:35:59.475 --> 00:36:01.395 given alcohol to a point
NOTE Confidence: 0.9889236
00:36:01.395 --> 00:36:02.375 o eight blood
NOTE Confidence: 0.96589494

00:36:02.835 --> 00:36:04.835 alcohol concentration or breath alcohol

NOTE Confidence: 0.96589494

00:36:04.835 --> 00:36:05.335 concentration.

NOTE Confidence: 0.9929844

00:36:06.540 --> 00:36:07.739 And so with a thirty

NOTE Confidence: 0.9929844

00:36:07.739 --> 00:36:09.340 milligram dose of delta eight

NOTE Confidence: 0.9929844

00:36:09.340 --> 00:36:11.120 THC orally administered,

NOTE Confidence: 0.9986682

00:36:11.900 --> 00:36:13.500 we get about that same

NOTE Confidence: 0.9986682

00:36:13.500 --> 00:36:14.560 level of impairment.

NOTE Confidence: 0.99634117

00:36:15.100 --> 00:36:16.940 With sixty milligrams of delta

NOTE Confidence: 0.99634117

00:36:16.940 --> 00:36:18.540 eight, we get about double

NOTE Confidence: 0.99634117

00:36:18.540 --> 00:36:19.040 that.

NOTE Confidence: 0.99965966

00:36:19.475 --> 00:36:20.915 And with thirty milligrams of

NOTE Confidence: 0.99965966

00:36:20.915 --> 00:36:22.135 delta nine THC,

NOTE Confidence: 0.995509

00:36:22.835 --> 00:36:24.695 we almost triple that in

NOTE Confidence: 0.99950534

00:36:25.715 --> 00:36:27.255 seventeen healthy adults.

NOTE Confidence: 0.99933434

00:36:28.915 --> 00:36:29.735 With vaporization,

NOTE Confidence: 0.99981517

00:36:31.555 --> 00:36:32.775 all three doses

NOTE Confidence: 0.94056237
00:36:33.540 --> 00:36:34.440 are approximate
NOTE Confidence: 0.99104476
00:36:34.820 --> 00:36:36.580 the amount of a point
NOTE Confidence: 0.99104476
00:36:36.580 --> 00:36:37.480 o eight BAC.
NOTE Confidence: 0.9938855
00:36:39.219 --> 00:36:41.080 So, again, we're seeing
NOTE Confidence: 0.96734715
00:36:41.780 --> 00:36:44.040 much stronger impairment of performance
NOTE Confidence: 0.96734715
00:36:44.100 --> 00:36:45.780 with oral dosing compared with
NOTE Confidence: 0.96734715
00:36:45.780 --> 00:36:46.280 VAPED.
NOTE Confidence: 0.9997738
00:36:46.725 --> 00:36:48.345 And I will point out
NOTE Confidence: 0.9991805
00:36:48.805 --> 00:36:50.325 that the timing of the
NOTE Confidence: 0.9991805
00:36:50.325 --> 00:36:51.864 simulated driving performance
NOTE Confidence: 0.99892163
00:36:52.805 --> 00:36:54.825 was tailored to the expected
NOTE Confidence: 0.99892163
00:36:55.045 --> 00:36:56.745 peak drug effect level
NOTE Confidence: 0.99688196
00:36:57.205 --> 00:36:58.165 based on the route of
NOTE Confidence: 0.99688196
00:36:58.165 --> 00:36:58.665 administration.
NOTE Confidence: 0.98854077
00:36:59.369 --> 00:37:00.650 So in the oral dose
NOTE Confidence: 0.98854077

00:37:00.650 --> 00:37:02.730 study, the simulated driving occurred
NOTE Confidence: 0.98854077

00:37:02.730 --> 00:37:04.349 two hours after exposure.
NOTE Confidence: 0.82609785

00:37:04.890 --> 00:37:06.029 With a vaped driving
NOTE Confidence: 0.97344923

00:37:06.329 --> 00:37:08.489 administration, it happened fifteen minutes
NOTE Confidence: 0.97344923

00:37:08.489 --> 00:37:09.789 after drug exposure.
NOTE Confidence: 0.9692285

00:37:12.654 --> 00:37:14.515 When we did field sobriety
NOTE Confidence: 0.9692285

00:37:14.734 --> 00:37:15.234 testing,
NOTE Confidence: 0.91913676

00:37:15.535 --> 00:37:17.234 and this again is very
NOTE Confidence: 0.91913676

00:37:17.295 --> 00:37:17.795 consistent
NOTE Confidence: 0.99427915

00:37:18.494 --> 00:37:20.174 with other experiments in our
NOTE Confidence: 0.99427915

00:37:20.174 --> 00:37:20.674 laboratory,
NOTE Confidence: 0.9971271

00:37:22.414 --> 00:37:22.914 we
NOTE Confidence: 0.99975777

00:37:23.214 --> 00:37:24.355 see very
NOTE Confidence: 0.9506179

00:37:24.815 --> 00:37:26.594 poor detection of impairment,
NOTE Confidence: 0.99662656

00:37:27.819 --> 00:37:30.000 in these overall field sobriety
NOTE Confidence: 0.99662656

00:37:30.060 --> 00:37:30.560 tests.

NOTE Confidence: 0.95573777
00:37:30.940 --> 00:37:32.079 So on average,
NOTE Confidence: 0.99932516
00:37:32.780 --> 00:37:34.540 detection of about three out
NOTE Confidence: 0.99932516
00:37:34.540 --> 00:37:36.560 of twenty eight possible clues
NOTE Confidence: 0.98748046
00:37:37.180 --> 00:37:39.040 on the walk and turn,
NOTE Confidence: 0.98748046
00:37:39.099 --> 00:37:41.359 touching your nose, modified Romberg,
NOTE Confidence: 0.63746065
00:37:41.785 --> 00:37:42.605 balance test.
NOTE Confidence: 0.9700354
00:37:45.385 --> 00:37:46.745 And the same thing for
NOTE Confidence: 0.9700354
00:37:46.745 --> 00:37:47.245 vaporization,
NOTE Confidence: 0.9860145
00:37:47.785 --> 00:37:49.465 an average of about three
NOTE Confidence: 0.9860145
00:37:49.465 --> 00:37:51.805 clues being detected, maybe two.
NOTE Confidence: 0.95406723
00:37:52.344 --> 00:37:54.025 And really no difference between
NOTE Confidence: 0.95406723
00:37:54.025 --> 00:37:55.485 delta eight or delta nine
NOTE Confidence: 0.9992604
00:37:56.200 --> 00:37:57.100 simply because
NOTE Confidence: 0.9988246
00:37:57.480 --> 00:37:59.239 standard field sobriety tests are
NOTE Confidence: 0.9988246
00:37:59.239 --> 00:38:00.140 not sensitive
NOTE Confidence: 0.99775934

00:38:01.000 --> 00:38:03.000 to impairment after exposure to
NOTE Confidence: 0.99775934

00:38:03.000 --> 00:38:04.440 either delta eight or delta
NOTE Confidence: 0.99775934

00:38:04.440 --> 00:38:05.180 nine THC.
NOTE Confidence: 0.98588324

00:38:05.719 --> 00:38:06.760 And I wish I should
NOTE Confidence: 0.98588324

00:38:06.760 --> 00:38:08.200 have added a column here
NOTE Confidence: 0.98588324

00:38:08.200 --> 00:38:09.000 to show you that when
NOTE Confidence: 0.98588324

00:38:09.000 --> 00:38:09.960 we dose people to a
NOTE Confidence: 0.98588324

00:38:09.960 --> 00:38:11.535 point o eight, it's somewhere
NOTE Confidence: 0.98588324

00:38:11.535 --> 00:38:12.895 up here around ten to
NOTE Confidence: 0.98588324

00:38:12.895 --> 00:38:14.434 fourteen, I think, on average.
NOTE Confidence: 0.90084314

00:38:16.895 --> 00:38:17.395 So,
NOTE Confidence: 0.9718079

00:38:18.575 --> 00:38:19.474 what I wanna
NOTE Confidence: 0.9285215

00:38:20.094 --> 00:38:21.155 hopefully convey
NOTE Confidence: 0.99262273

00:38:21.694 --> 00:38:23.694 through these experiments and and
NOTE Confidence: 0.99262273

00:38:23.694 --> 00:38:25.055 and my talk today is
NOTE Confidence: 0.99262273

00:38:25.055 --> 00:38:25.555 that

NOTE Confidence: 0.9995101
00:38:26.140 --> 00:38:27.739 when we look at the
NOTE Confidence: 0.9995101
00:38:27.739 --> 00:38:28.640 bigger picture,
NOTE Confidence: 0.99460775
00:38:29.420 --> 00:38:30.640 delta eight THC
NOTE Confidence: 0.9991654
00:38:31.020 --> 00:38:31.520 produces
NOTE Confidence: 0.9980269
00:38:32.219 --> 00:38:32.719 nearly
NOTE Confidence: 0.9998511
00:38:33.020 --> 00:38:33.520 identical
NOTE Confidence: 0.9988982
00:38:33.980 --> 00:38:36.160 effects to delta nine THC
NOTE Confidence: 0.99627775
00:38:36.859 --> 00:38:38.424 with regards to the type
NOTE Confidence: 0.99627775
00:38:38.424 --> 00:38:40.585 of subjective effects that people
NOTE Confidence: 0.99627775
00:38:40.585 --> 00:38:41.085 experience
NOTE Confidence: 0.9726773
00:38:41.864 --> 00:38:43.164 as well as the magnitude
NOTE Confidence: 0.9726773
00:38:43.224 --> 00:38:43.964 of effects
NOTE Confidence: 0.9985616
00:38:44.424 --> 00:38:45.724 at double the dose.
NOTE Confidence: 0.99973756
00:38:46.265 --> 00:38:48.364 So when we're thinking about
NOTE Confidence: 0.9998363
00:38:48.984 --> 00:38:49.484 the
NOTE Confidence: 0.9997857

00:38:49.944 --> 00:38:50.444 regulatory
NOTE Confidence: 0.9982411

00:38:50.825 --> 00:38:53.085 environment up until last week
NOTE Confidence: 0.9917151

00:38:53.559 --> 00:38:55.400 and even now continuing for
NOTE Confidence: 0.9917151

00:38:55.400 --> 00:38:56.599 the next year, and that's
NOTE Confidence: 0.9917151

00:38:56.599 --> 00:38:57.579 my next slide,
NOTE Confidence: 0.8398589

00:38:58.119 --> 00:38:59.980 is that delta A THC
NOTE Confidence: 0.966008

00:39:00.520 --> 00:39:01.819 products were unregulated,
NOTE Confidence: 0.99968237

00:39:02.359 --> 00:39:03.180 sold in
NOTE Confidence: 0.99966097

00:39:04.039 --> 00:39:06.219 retail environments that are readily
NOTE Confidence: 0.99966097

00:39:06.359 --> 00:39:07.660 and easily accessible
NOTE Confidence: 0.98703766

00:39:08.114 --> 00:39:09.415 to most people
NOTE Confidence: 0.9997522

00:39:10.355 --> 00:39:10.855 nationwide
NOTE Confidence: 0.9630081

00:39:11.395 --> 00:39:12.455 and were considered
NOTE Confidence: 0.997855

00:39:12.915 --> 00:39:14.535 an unscheduled drug,
NOTE Confidence: 0.9995499

00:39:16.035 --> 00:39:16.775 which is
NOTE Confidence: 0.99796575

00:39:17.155 --> 00:39:17.655 crazy.

NOTE Confidence: 0.98610425
00:39:19.475 --> 00:39:21.094 We did see stronger
NOTE Confidence: 0.99870396
00:39:21.690 --> 00:39:23.630 and shorter subjective effects
NOTE Confidence: 0.9786209
00:39:23.930 --> 00:39:25.609 and titration when it was
NOTE Confidence: 0.9786209
00:39:25.609 --> 00:39:27.390 vaporized in terms of subjective
NOTE Confidence: 0.8635412
00:39:28.410 --> 00:39:29.469 and, drug effect.
NOTE Confidence: 0.98917747
00:39:29.930 --> 00:39:31.530 But with oral dosing, we
NOTE Confidence: 0.98917747
00:39:31.530 --> 00:39:32.989 saw saw more impairment
NOTE Confidence: 0.9664585
00:39:33.924 --> 00:39:35.065 compared with vaporization.
NOTE Confidence: 0.95793235
00:39:35.765 --> 00:39:36.964 And that when we looked
NOTE Confidence: 0.95793235
00:39:36.964 --> 00:39:37.704 at the pharmacokinetic
NOTE Confidence: 0.9997321
00:39:38.484 --> 00:39:38.984 data
NOTE Confidence: 0.9903945
00:39:39.364 --> 00:39:41.224 in terms of blood concentrations,
NOTE Confidence: 0.9995574
00:39:41.605 --> 00:39:42.344 the difference
NOTE Confidence: 0.9833821
00:39:42.964 --> 00:39:44.805 in potency is most likely
NOTE Confidence: 0.9833821
00:39:44.805 --> 00:39:47.224 related to a combination of,
NOTE Confidence: 0.99948466

00:39:48.200 --> 00:39:49.099 the metabolism
NOTE Confidence: 0.9875488

00:39:49.400 --> 00:39:51.000 differential metabolism of the two
NOTE Confidence: 0.9875488

00:39:51.000 --> 00:39:53.099 drugs, the eleven hydroxy psychoactive
NOTE Confidence: 0.9205644

00:39:53.400 --> 00:39:53.900 metabolite,
NOTE Confidence: 0.9339224

00:39:54.440 --> 00:39:56.920 and some probably minor but
NOTE Confidence: 0.9339224

00:39:56.920 --> 00:39:57.980 potentially relevant
NOTE Confidence: 0.9334564

00:39:58.359 --> 00:39:59.640 differences between the two in
NOTE Confidence: 0.9334564

00:39:59.640 --> 00:40:01.000 terms of CB one receptor
NOTE Confidence: 0.9334564

00:40:01.000 --> 00:40:01.500 affinity.
NOTE Confidence: 0.988778

00:40:03.414 --> 00:40:04.855 And that we do see
NOTE Confidence: 0.988778

00:40:04.855 --> 00:40:07.114 significant impairment of driving performance
NOTE Confidence: 0.99787444

00:40:07.654 --> 00:40:09.094 that is not detected by
NOTE Confidence: 0.99787444

00:40:09.094 --> 00:40:11.174 standard field sobriety tests. And
NOTE Confidence: 0.99787444

00:40:11.174 --> 00:40:13.035 so that becomes really important
NOTE Confidence: 0.99787444

00:40:13.174 --> 00:40:14.714 from a policy perspective
NOTE Confidence: 0.81551903

00:40:15.575 --> 00:40:16.954 because in the

NOTE Confidence: 0.9998115
00:40:17.300 --> 00:40:17.800 roadside
NOTE Confidence: 0.98980105
00:40:18.100 --> 00:40:18.760 law enforcement
NOTE Confidence: 0.9917927
00:40:19.140 --> 00:40:19.640 setting,
NOTE Confidence: 0.9915778
00:40:19.940 --> 00:40:21.219 if someone is pulled over
NOTE Confidence: 0.9915778
00:40:21.219 --> 00:40:22.520 for erratic driving,
NOTE Confidence: 0.96908355
00:40:23.060 --> 00:40:24.520 they're given a breathalyzer,
NOTE Confidence: 0.97525316
00:40:24.980 --> 00:40:26.739 they pass it. They're given
NOTE Confidence: 0.97525316
00:40:26.739 --> 00:40:28.660 field sobriety tests, they pass
NOTE Confidence: 0.97525316
00:40:28.660 --> 00:40:30.020 that. They're taken to the
NOTE Confidence: 0.97525316
00:40:30.020 --> 00:40:31.859 emergency department and blood is
NOTE Confidence: 0.97525316
00:40:31.859 --> 00:40:33.435 drawn and tested for delta
NOTE Confidence: 0.97525316
00:40:33.435 --> 00:40:34.094 nine THC,
NOTE Confidence: 0.95097816
00:40:34.715 --> 00:40:36.735 it may be completely negative,
NOTE Confidence: 0.99088514
00:40:37.275 --> 00:40:38.715 and that person may be
NOTE Confidence: 0.99088514
00:40:38.715 --> 00:40:40.795 significantly impaired due to delta
NOTE Confidence: 0.99088514

00:40:40.795 --> 00:40:42.094 eight THC exposure.
NOTE Confidence: 0.9916938

00:40:42.555 --> 00:40:44.475 Because, again, we're not seeing
NOTE Confidence: 0.9916938

00:40:44.475 --> 00:40:45.375 cross reactivity
NOTE Confidence: 0.9871085

00:40:46.299 --> 00:40:48.239 at a mass spectrometer analysis
NOTE Confidence: 0.9871085

00:40:48.460 --> 00:40:50.059 of delta eight versus delta
NOTE Confidence: 0.9871085

00:40:50.059 --> 00:40:51.519 nine THC in blood.
NOTE Confidence: 0.9952093

00:40:52.700 --> 00:40:54.299 So and, again, I'm gonna
NOTE Confidence: 0.9952093

00:40:54.299 --> 00:40:54.799 highlight
NOTE Confidence: 0.93508774

00:40:55.420 --> 00:40:56.859 that last week for anybody
NOTE Confidence: 0.93508774

00:40:56.859 --> 00:40:58.079 who's not aware.
NOTE Confidence: 0.99874914

00:40:58.795 --> 00:41:00.495 In the bill that reopened
NOTE Confidence: 0.99874914

00:41:00.795 --> 00:41:02.415 the government, there was language
NOTE Confidence: 0.99874914

00:41:02.475 --> 00:41:04.175 added at the eleventh hour
NOTE Confidence: 0.9647788

00:41:04.795 --> 00:41:05.535 that was,
NOTE Confidence: 0.99917656

00:41:07.835 --> 00:41:09.835 intended to close this hemp
NOTE Confidence: 0.99917656

00:41:09.835 --> 00:41:10.335 loophole

NOTE Confidence: 0.8892575
00:41:11.275 --> 00:41:12.015 by banning,
NOTE Confidence: 0.99982315
00:41:13.180 --> 00:41:14.320 any intoxicating
NOTE Confidence: 0.93927664
00:41:14.780 --> 00:41:17.020 products derived from hemp, including
NOTE Confidence: 0.93927664
00:41:17.020 --> 00:41:18.320 delta eight THC.
NOTE Confidence: 0.9991849
00:41:19.340 --> 00:41:19.840 Now
NOTE Confidence: 0.99775314
00:41:20.460 --> 00:41:21.760 the question becomes
NOTE Confidence: 0.89798784
00:41:22.700 --> 00:41:24.300 is what's gonna happen to
NOTE Confidence: 0.89798784
00:41:24.300 --> 00:41:25.360 this industry?
NOTE Confidence: 0.97212255
00:41:26.585 --> 00:41:28.505 There the language in the
NOTE Confidence: 0.97212255
00:41:28.505 --> 00:41:30.265 bill says that this bill,
NOTE Confidence: 0.97212255
00:41:30.265 --> 00:41:31.545 even though it's signed into
NOTE Confidence: 0.97212255
00:41:31.545 --> 00:41:32.364 law currently,
NOTE Confidence: 0.9982673
00:41:32.905 --> 00:41:34.744 will not be enforced for
NOTE Confidence: 0.9982673
00:41:34.744 --> 00:41:36.125 one calendar year.
NOTE Confidence: 0.9802034
00:41:36.664 --> 00:41:38.844 So this large industry,
NOTE Confidence: 0.94909465

00:41:39.145 --> 00:41:40.779 according to the Washington Post,

NOTE Confidence: 0.94909465

00:41:40.779 --> 00:41:42.719 that's worth thirty billion dollars

NOTE Confidence: 0.94909465

00:41:42.779 --> 00:41:44.539 now has a year to

NOTE Confidence: 0.94909465

00:41:44.539 --> 00:41:46.160 advocate for some change

NOTE Confidence: 0.9746277

00:41:46.940 --> 00:41:49.259 to alter the packaging or

NOTE Confidence: 0.9746277

00:41:49.259 --> 00:41:50.940 the formulation of their products

NOTE Confidence: 0.9746277

00:41:50.940 --> 00:41:52.700 to somehow meet the new

NOTE Confidence: 0.9746277

00:41:52.700 --> 00:41:53.200 definition,

NOTE Confidence: 0.97231466

00:41:54.835 --> 00:41:56.275 or to move into a

NOTE Confidence: 0.97231466

00:41:56.275 --> 00:41:58.675 different industry altogether. So it's

NOTE Confidence: 0.97231466

00:41:58.675 --> 00:42:00.275 it's it's gonna be interesting

NOTE Confidence: 0.97231466

00:42:00.275 --> 00:42:01.735 to see if delta eight

NOTE Confidence: 0.9980869

00:42:02.275 --> 00:42:02.775 emerges

NOTE Confidence: 0.9996798

00:42:03.075 --> 00:42:04.135 as a product

NOTE Confidence: 0.9998089

00:42:04.515 --> 00:42:05.255 of choice

NOTE Confidence: 0.9986277

00:42:05.795 --> 00:42:07.815 within current state legal

NOTE Confidence: 0.9991213
00:42:09.119 --> 00:42:10.099 cannabis markets
NOTE Confidence: 0.9709832
00:42:10.799 --> 00:42:12.000 or if it gets pushed
NOTE Confidence: 0.9709832
00:42:12.000 --> 00:42:13.859 into an underground black market
NOTE Confidence: 0.9709832
00:42:13.920 --> 00:42:14.819 that's sustained.
NOTE Confidence: 0.9776068
00:42:15.280 --> 00:42:16.260 So we have,
NOTE Confidence: 0.9962177
00:42:17.440 --> 00:42:19.460 clear demand for these products
NOTE Confidence: 0.99733233
00:42:19.760 --> 00:42:20.900 when they were unregulated
NOTE Confidence: 0.9984434
00:42:21.280 --> 00:42:22.960 and unscheduled. The question is
NOTE Confidence: 0.9984434
00:42:22.960 --> 00:42:23.780 whether they
NOTE Confidence: 0.99935013
00:42:24.695 --> 00:42:25.195 remain
NOTE Confidence: 0.9988638
00:42:26.055 --> 00:42:26.715 a viable
NOTE Confidence: 0.85377914
00:42:27.655 --> 00:42:28.795 product and industry
NOTE Confidence: 0.9948886
00:42:29.495 --> 00:42:32.075 after it becomes scheduled again.
NOTE Confidence: 0.988439
00:42:33.175 --> 00:42:33.675 So
NOTE Confidence: 0.9905705
00:42:34.055 --> 00:42:35.114 more to be seen,
NOTE Confidence: 0.99958444

00:42:35.735 --> 00:42:37.035 with time on that.
NOTE Confidence: 0.9992304

00:42:37.730 --> 00:42:39.349 So where we're going from
NOTE Confidence: 0.9992304

00:42:39.489 --> 00:42:40.309 from here
NOTE Confidence: 0.98563415

00:42:40.609 --> 00:42:41.670 is that we're,
NOTE Confidence: 0.9837062

00:42:43.969 --> 00:42:46.710 interested in looking at, generally
NOTE Confidence: 0.9837062

00:42:46.930 --> 00:42:48.690 speaking, the impact of oral
NOTE Confidence: 0.9837062

00:42:48.690 --> 00:42:49.510 dose formulation.
NOTE Confidence: 0.9226383

00:42:50.049 --> 00:42:50.549 So,
NOTE Confidence: 0.98114926

00:42:51.275 --> 00:42:52.955 in our experiments, I showed
NOTE Confidence: 0.98114926

00:42:52.955 --> 00:42:54.495 you that our oral dosing
NOTE Confidence: 0.98114926

00:42:54.555 --> 00:42:55.355 was in a,
NOTE Confidence: 0.99255466

00:42:55.755 --> 00:42:57.455 THC infused brownie.
NOTE Confidence: 0.92432475

00:42:58.875 --> 00:43:00.475 My colleague, Tori Spindle here,
NOTE Confidence: 0.92432475

00:43:00.475 --> 00:43:01.935 is doing a really fascinating
NOTE Confidence: 0.92432475

00:43:02.155 --> 00:43:03.215 study right now,
NOTE Confidence: 0.99680996

00:43:04.269 --> 00:43:06.049 comparing delta nine THC

NOTE Confidence: 0.96846914
00:43:06.430 --> 00:43:08.190 in a gummy versus a
NOTE Confidence: 0.96846914
00:43:08.190 --> 00:43:10.289 brownie versus a nano infused,
NOTE Confidence: 0.99991834
00:43:11.630 --> 00:43:12.130 beverage
NOTE Confidence: 0.9265299
00:43:12.750 --> 00:43:14.289 and showing that the nanoemulsion,
NOTE Confidence: 0.92379427
00:43:14.910 --> 00:43:16.385 which is essentially,
NOTE Confidence: 0.9800832
00:43:17.325 --> 00:43:18.465 converts a lipophilic
NOTE Confidence: 0.9924975
00:43:18.844 --> 00:43:19.344 THC
NOTE Confidence: 0.96013063
00:43:19.645 --> 00:43:21.405 substance and makes it water
NOTE Confidence: 0.96013063
00:43:21.405 --> 00:43:21.905 soluble,
NOTE Confidence: 0.99811953
00:43:22.525 --> 00:43:23.745 is showing substantially
NOTE Confidence: 0.9726964
00:43:24.285 --> 00:43:26.305 faster onset of drug effects,
NOTE Confidence: 0.9726964
00:43:26.445 --> 00:43:27.585 greater absorption,
NOTE Confidence: 0.9978084
00:43:27.965 --> 00:43:29.505 and stronger drug effects.
NOTE Confidence: 0.97394246
00:43:30.045 --> 00:43:31.680 So that even though we're
NOTE Confidence: 0.97394246
00:43:31.680 --> 00:43:33.040 doing that experiment with delta
NOTE Confidence: 0.97394246

00:43:33.040 --> 00:43:34.719 nine THC, there's every reason
NOTE Confidence: 0.97394246

00:43:34.719 --> 00:43:35.520 to believe that it would
NOTE Confidence: 0.97394246

00:43:35.520 --> 00:43:36.960 extend to delta eight THC
NOTE Confidence: 0.97394246

00:43:36.960 --> 00:43:38.640 products and other cannabinoids as
NOTE Confidence: 0.97394246

00:43:38.640 --> 00:43:39.140 well.
NOTE Confidence: 0.9926577

00:43:39.520 --> 00:43:41.200 And we're also interested in
NOTE Confidence: 0.9926577

00:43:41.200 --> 00:43:42.560 in doing studies of other
NOTE Confidence: 0.9926577

00:43:42.560 --> 00:43:44.239 novel cannabinoids. So we have
NOTE Confidence: 0.9926577

00:43:44.239 --> 00:43:45.920 a protocol going through review
NOTE Confidence: 0.9926577

00:43:45.920 --> 00:43:46.660 right now,
NOTE Confidence: 0.8950077

00:43:47.195 --> 00:43:48.795 to start to basically do
NOTE Confidence: 0.8950077

00:43:48.795 --> 00:43:49.855 the same experiments
NOTE Confidence: 0.9567409

00:43:50.795 --> 00:43:51.455 with hexahydrocannabinol
NOTE Confidence: 0.9715088

00:43:52.315 --> 00:43:54.235 and other minor cannabinoids like
NOTE Confidence: 0.9715088

00:43:54.235 --> 00:43:54.735 cannabinol.
NOTE Confidence: 0.9980214

00:43:55.355 --> 00:43:56.315 And so we'll see where

NOTE Confidence: 0.9980214
00:43:56.315 --> 00:43:57.455 things go with that.
NOTE Confidence: 0.9945376
00:43:58.315 --> 00:44:00.400 So thanks for your time.
NOTE Confidence: 0.9945376
00:44:00.460 --> 00:44:02.220 Happy to, touch base and
NOTE Confidence: 0.9945376
00:44:02.220 --> 00:44:03.040 answer questions.
NOTE Confidence: 0.97810066
00:44:03.580 --> 00:44:05.020 And I also do wanna
NOTE Confidence: 0.97810066
00:44:05.020 --> 00:44:06.060 just point out if we
NOTE Confidence: 0.97810066
00:44:06.060 --> 00:44:06.940 run out of time and
NOTE Confidence: 0.97810066
00:44:06.940 --> 00:44:08.220 people have other questions or
NOTE Confidence: 0.97810066
00:44:08.220 --> 00:44:09.580 don't feel comfortable asking them
NOTE Confidence: 0.97810066
00:44:09.580 --> 00:44:10.400 to this forum,
NOTE Confidence: 0.9975001
00:44:10.940 --> 00:44:12.160 my contact information
NOTE Confidence: 0.99912727
00:44:12.620 --> 00:44:13.820 is here. Feel free to
NOTE Confidence: 0.99912727
00:44:13.820 --> 00:44:15.040 reach out via email.
NOTE Confidence: 0.9564982
00:44:18.594 --> 00:44:19.895 Brian, that was great.
NOTE Confidence: 0.92298615
00:44:20.994 --> 00:44:22.915 Your your slides and your
NOTE Confidence: 0.92298615

00:44:22.915 --> 00:44:24.214 data is so clear.
NOTE Confidence: 0.9133903
00:44:25.315 --> 00:44:25.815 Questions?
NOTE Confidence: 0.87011397
00:44:26.515 --> 00:44:27.395 Folks, please,
NOTE Confidence: 0.9985542
00:44:28.329 --> 00:44:30.010 unmute yourself. I see someone's
NOTE Confidence: 0.9985542
00:44:30.010 --> 00:44:30.910 hand up there.
NOTE Confidence: 0.98579705
00:44:34.329 --> 00:44:35.609 Go ahead and unmute and
NOTE Confidence: 0.98579705
00:44:35.609 --> 00:44:36.510 ask your question.
NOTE Confidence: 0.98862183
00:44:37.130 --> 00:44:38.250 Oh, okay. I think that's
NOTE Confidence: 0.98862183
00:44:38.250 --> 00:44:39.710 my hand. Oh,
NOTE Confidence: 0.82045627
00:44:40.010 --> 00:44:40.510 Godfrey.
NOTE Confidence: 0.9847079
00:44:41.015 --> 00:44:42.455 Yeah. This is Godfrey. So
NOTE Confidence: 0.9847079
00:44:42.455 --> 00:44:44.055 the as Cyril said, this
NOTE Confidence: 0.9847079
00:44:44.055 --> 00:44:45.915 is very thoughtful and exceptionally
NOTE Confidence: 0.9847079
00:44:45.975 --> 00:44:47.655 thorough research, so thank you
NOTE Confidence: 0.9847079
00:44:47.655 --> 00:44:48.315 so much.
NOTE Confidence: 0.9772588
00:44:50.375 --> 00:44:51.655 And I know that you

NOTE Confidence: 0.9772588
00:44:51.655 --> 00:44:52.955 showed us that
NOTE Confidence: 0.9442255
00:44:53.610 --> 00:44:55.370 subjective effects as you measure
NOTE Confidence: 0.9442255
00:44:55.370 --> 00:44:57.550 them were not different between
NOTE Confidence: 0.99545574
00:44:58.170 --> 00:44:59.530 the delta eight and delta
NOTE Confidence: 0.99545574
00:44:59.530 --> 00:45:00.990 nine. I just wondered
NOTE Confidence: 0.94684714
00:45:01.530 --> 00:45:02.910 if you asked your subjects
NOTE Confidence: 0.94684714
00:45:02.970 --> 00:45:04.890 whether they use delta eight
NOTE Confidence: 0.94684714
00:45:04.890 --> 00:45:05.390 recreationally,
NOTE Confidence: 0.97708744
00:45:06.490 --> 00:45:07.530 just to give you the
NOTE Confidence: 0.97708744
00:45:07.530 --> 00:45:08.990 opportunity to say,
NOTE Confidence: 0.9935406
00:45:10.194 --> 00:45:11.635 with them being blinded, what
NOTE Confidence: 0.9935406
00:45:11.635 --> 00:45:12.515 do you think you got
NOTE Confidence: 0.9935406
00:45:12.515 --> 00:45:13.015 today
NOTE Confidence: 0.9700634
00:45:13.395 --> 00:45:14.114 to see if they could
NOTE Confidence: 0.9700634
00:45:14.114 --> 00:45:14.935 tell the difference?
NOTE Confidence: 0.95272934

00:45:15.474 --> 00:45:17.555 So we had a mixed
NOTE Confidence: 0.95272934

00:45:17.555 --> 00:45:19.075 bag of folks who had
NOTE Confidence: 0.95272934

00:45:19.075 --> 00:45:20.594 used a c b a
NOTE Confidence: 0.95272934

00:45:20.594 --> 00:45:21.895 delta eight product
NOTE Confidence: 0.9698471

00:45:22.380 --> 00:45:23.819 prior to being in the
NOTE Confidence: 0.9698471

00:45:23.819 --> 00:45:25.519 experiment. It wasn't a requirement
NOTE Confidence: 0.9698471

00:45:25.739 --> 00:45:26.940 because we weren't sure we
NOTE Confidence: 0.9698471

00:45:26.940 --> 00:45:28.380 could find enough people who'd
NOTE Confidence: 0.9698471

00:45:28.380 --> 00:45:29.440 use these products,
NOTE Confidence: 0.9852727

00:45:30.539 --> 00:45:31.819 to come into our our
NOTE Confidence: 0.9852727

00:45:31.819 --> 00:45:33.019 our studies. We knew we
NOTE Confidence: 0.9852727

00:45:33.019 --> 00:45:34.059 could find people who'd use
NOTE Confidence: 0.9852727

00:45:34.059 --> 00:45:34.960 delta nine.
NOTE Confidence: 0.8967561

00:45:36.635 --> 00:45:37.135 We
NOTE Confidence: 0.960851

00:45:37.435 --> 00:45:38.954 we we we discussed this
NOTE Confidence: 0.960851

00:45:38.954 --> 00:45:40.415 actually just last week.

NOTE Confidence: 0.94750017
00:45:41.035 --> 00:45:42.395 So what we we didn't
NOTE Confidence: 0.94750017
00:45:42.395 --> 00:45:43.994 formally assess that, but we
NOTE Confidence: 0.94750017
00:45:43.994 --> 00:45:44.815 had volunteers
NOTE Confidence: 0.94514775
00:45:45.994 --> 00:45:46.734 tell us,
NOTE Confidence: 0.9733027
00:45:47.515 --> 00:45:48.015 verbally,
NOTE Confidence: 0.98096037
00:45:48.520 --> 00:45:49.560 oh, I think I got
NOTE Confidence: 0.98096037
00:45:49.560 --> 00:45:50.920 delta eight this week, or
NOTE Confidence: 0.98096037
00:45:50.920 --> 00:45:52.120 that that was definitely a
NOTE Confidence: 0.98096037
00:45:52.120 --> 00:45:53.580 delta nine. That was different.
NOTE Confidence: 0.9914108
00:45:54.440 --> 00:45:56.120 We made notes of all
NOTE Confidence: 0.9914108
00:45:56.120 --> 00:45:57.420 of those instances,
NOTE Confidence: 0.9975538
00:45:58.120 --> 00:45:59.160 and we're actually in the
NOTE Confidence: 0.9975538
00:45:59.160 --> 00:46:00.680 process right now of going
NOTE Confidence: 0.9975538
00:46:00.680 --> 00:46:01.420 back through
NOTE Confidence: 0.9973276
00:46:01.955 --> 00:46:03.075 and trying to see if
NOTE Confidence: 0.9973276

00:46:03.075 --> 00:46:04.775 they were right or wrong,
NOTE Confidence: 0.9996769

00:46:05.395 --> 00:46:06.375 in those cases.
NOTE Confidence: 0.97616357

00:46:06.755 --> 00:46:07.715 Yeah. Love to know what
NOTE Confidence: 0.97616357

00:46:07.715 --> 00:46:08.935 you find with that.
NOTE Confidence: 0.99941456

00:46:09.315 --> 00:46:10.215 Yeah. Yeah.
NOTE Confidence: 0.9998176

00:46:10.995 --> 00:46:11.495 Thanks.
NOTE Confidence: 0.94348574

00:46:14.195 --> 00:46:15.315 Ko, you have a question?
NOTE Confidence: 0.94348574

00:46:15.315 --> 00:46:16.055 Do you wanna
NOTE Confidence: 0.9985741

00:46:18.089 --> 00:46:19.049 do you wanna go ahead
NOTE Confidence: 0.9985741

00:46:19.049 --> 00:46:19.710 and ask?
NOTE Confidence: 0.9543916

00:46:20.170 --> 00:46:20.670 I'm
NOTE Confidence: 0.9481666

00:46:20.969 --> 00:46:22.890 just curious. Have you,
NOTE Confidence: 0.9853249

00:46:24.089 --> 00:46:24.589 observed
NOTE Confidence: 0.9643369

00:46:25.130 --> 00:46:27.690 some, like, psychotic effect or
NOTE Confidence: 0.9643369

00:46:27.690 --> 00:46:30.270 mood effect for delta eight?
NOTE Confidence: 0.99638134

00:46:31.715 --> 00:46:33.175 We haven't seen anything

NOTE Confidence: 0.99464047
00:46:33.875 --> 00:46:34.675 where I would say it
NOTE Confidence: 0.99464047
00:46:34.675 --> 00:46:36.515 was a psychotic or any
NOTE Confidence: 0.99464047
00:46:36.515 --> 00:46:38.455 hallucinations or anything like that.
NOTE Confidence: 0.9860436
00:46:39.315 --> 00:46:39.815 We
NOTE Confidence: 0.9781806
00:46:40.195 --> 00:46:41.635 when we did see adverse
NOTE Confidence: 0.9781806
00:46:41.635 --> 00:46:43.635 effects and adverse events, it
NOTE Confidence: 0.9781806
00:46:43.635 --> 00:46:45.739 was in these experiments, usually
NOTE Confidence: 0.9781806
00:46:45.739 --> 00:46:47.359 the delta nine THC dose,
NOTE Confidence: 0.98925483
00:46:47.660 --> 00:46:48.940 especially when we pushed it
NOTE Confidence: 0.98925483
00:46:48.940 --> 00:46:49.840 to thirty milligrams.
NOTE Confidence: 0.95874107
00:46:51.100 --> 00:46:52.780 We did see some adverse
NOTE Confidence: 0.95874107
00:46:52.780 --> 00:46:54.700 events at the higher doses
NOTE Confidence: 0.95874107
00:46:54.700 --> 00:46:55.920 of delta eight THC,
NOTE Confidence: 0.99701625
00:46:56.565 --> 00:46:57.525 and they were the same
NOTE Confidence: 0.99701625
00:46:57.525 --> 00:46:58.565 kinds of things that we
NOTE Confidence: 0.99701625

00:46:58.565 --> 00:46:59.605 see with delta nine. It
NOTE Confidence: 0.99701625

00:46:59.605 --> 00:47:00.724 was usually a little bit
NOTE Confidence: 0.99701625

00:47:00.724 --> 00:47:02.165 of anxiety, a little bit
NOTE Confidence: 0.99701625

00:47:02.165 --> 00:47:02.825 of paranoia,
NOTE Confidence: 0.97863764

00:47:03.444 --> 00:47:05.305 some upset stomach or nausea.
NOTE Confidence: 0.97863764

00:47:05.364 --> 00:47:06.425 But, again,
NOTE Confidence: 0.9952072

00:47:07.285 --> 00:47:08.025 out of
NOTE Confidence: 0.99289

00:47:08.325 --> 00:47:08.790 if
NOTE Confidence: 0.9730989

00:47:09.350 --> 00:47:11.130 out of every ten AEs,
NOTE Confidence: 0.9730989

00:47:11.430 --> 00:47:12.870 one was probably a delta
NOTE Confidence: 0.9730989

00:47:12.870 --> 00:47:14.070 eight dose and nine were
NOTE Confidence: 0.9730989

00:47:14.070 --> 00:47:15.770 a delta nine THC dose.
NOTE Confidence: 0.9730823

00:47:22.494 --> 00:47:24.015 Other questions? If not, I
NOTE Confidence: 0.9730823

00:47:24.015 --> 00:47:25.614 have a question. So, Ryan,
NOTE Confidence: 0.9730823

00:47:25.614 --> 00:47:26.735 can you say a little
NOTE Confidence: 0.9730823

00:47:26.735 --> 00:47:27.795 more about the

NOTE Confidence: 0.98065937
00:47:29.855 --> 00:47:32.035 the affinity of delta eight,
NOTE Confidence: 0.9551085
00:47:32.815 --> 00:47:34.415 relative to delta nine at
NOTE Confidence: 0.9551085
00:47:34.415 --> 00:47:35.715 the c b one receptor?
NOTE Confidence: 0.9968364
00:47:37.000 --> 00:47:37.500 Yeah.
NOTE Confidence: 0.97983205
00:47:37.960 --> 00:47:39.239 So and I I wish
NOTE Confidence: 0.97983205
00:47:39.239 --> 00:47:40.460 I had that
NOTE Confidence: 0.9499359
00:47:41.000 --> 00:47:42.120 data right in front of
NOTE Confidence: 0.9499359
00:47:42.120 --> 00:47:43.640 me. I've looked at it
NOTE Confidence: 0.9499359
00:47:43.640 --> 00:47:45.580 a couple different times, and
NOTE Confidence: 0.9499359
00:47:45.800 --> 00:47:47.820 that's really I I mean,
NOTE Confidence: 0.7861318
00:47:48.520 --> 00:47:48.931 it's an area of pharmacology
NOTE Confidence: 0.7861318
00:47:48.931 --> 00:47:48.950 that I know a little
NOTE Confidence: 0.7861318
00:47:48.950 --> 00:47:48.969 bit, but I don't know
NOTE Confidence: 0.7861318
00:47:48.969 --> 00:47:48.988 a lot. I can't say
NOTE Confidence: 0.7861318
00:47:48.988 --> 00:47:49.755 that I'm an expert there.
NOTE Confidence: 0.89312273

00:47:53.035 --> 00:47:54.315 Expert there at all. When
NOTE Confidence: 0.89312273

00:47:54.315 --> 00:47:55.275 you look at the KI
NOTE Confidence: 0.89312273

00:47:55.275 --> 00:47:56.894 values for the two, they're
NOTE Confidence: 0.9792886

00:47:57.194 --> 00:47:58.795 look more similar than different
NOTE Confidence: 0.9792886

00:47:58.795 --> 00:47:59.454 to me.
NOTE Confidence: 0.99165225

00:48:02.250 --> 00:48:03.530 What I don't know is
NOTE Confidence: 0.99165225

00:48:03.530 --> 00:48:05.130 whether there's, you know, a
NOTE Confidence: 0.99165225

00:48:05.130 --> 00:48:06.270 concentration dependent
NOTE Confidence: 0.9673447

00:48:07.450 --> 00:48:08.810 effect there. You know, with
NOTE Confidence: 0.9673447

00:48:08.810 --> 00:48:09.550 some cannabinoids,
NOTE Confidence: 0.99972874

00:48:09.930 --> 00:48:11.770 you can have slightly different
NOTE Confidence: 0.99972874

00:48:11.770 --> 00:48:12.270 pharmacological
NOTE Confidence: 0.9995575

00:48:12.650 --> 00:48:14.825 effects based on the concentration
NOTE Confidence: 0.98512214

00:48:15.525 --> 00:48:16.724 of the cannabinoids at the
NOTE Confidence: 0.98512214

00:48:16.724 --> 00:48:17.685 receptor, and I don't know
NOTE Confidence: 0.98512214

00:48:17.685 --> 00:48:19.145 if there's something there.

NOTE Confidence: 0.99956304

00:48:19.525 --> 00:48:20.744 But in terms of just

NOTE Confidence: 0.99879074

00:48:21.125 --> 00:48:22.265 receptor affinity,

NOTE Confidence: 0.97935027

00:48:23.445 --> 00:48:24.805 when I've looked looked it

NOTE Confidence: 0.97935027

00:48:24.805 --> 00:48:26.484 up, they look pretty similar,

NOTE Confidence: 0.97935027

00:48:26.484 --> 00:48:27.765 but I think delta nine

NOTE Confidence: 0.97935027

00:48:27.765 --> 00:48:28.405 is slightly

NOTE Confidence: 0.9815795

00:48:28.880 --> 00:48:30.320 has a slightly better affinity

NOTE Confidence: 0.9815795

00:48:30.320 --> 00:48:31.600 than delta eight. And so

NOTE Confidence: 0.9815795

00:48:31.600 --> 00:48:32.800 that's why, you know, it

NOTE Confidence: 0.9815795

00:48:32.800 --> 00:48:34.320 might be some combination of

NOTE Confidence: 0.9815795

00:48:34.320 --> 00:48:36.000 receptor affinity as well as

NOTE Confidence: 0.9815795

00:48:36.000 --> 00:48:37.920 the metap differential metabolism that

NOTE Confidence: 0.9815795

00:48:37.920 --> 00:48:39.300 drives the difference in potency.

NOTE Confidence: 0.9795617

00:48:40.239 --> 00:48:41.360 Thanks. And and just to

NOTE Confidence: 0.9795617

00:48:41.360 --> 00:48:43.295 follow that up, is delta

NOTE Confidence: 0.9795617

00:48:43.355 --> 00:48:45.694 eight also a partial agonist
NOTE Confidence: 0.9795617

00:48:45.755 --> 00:48:46.895 like delta nine?
NOTE Confidence: 0.9251755

00:48:47.515 --> 00:48:48.795 I believe it is. It
NOTE Confidence: 0.9251755

00:48:48.795 --> 00:48:49.935 is. Yes.
NOTE Confidence: 0.93676484

00:48:50.635 --> 00:48:51.994 We have someone I'm pretty
NOTE Confidence: 0.93676484

00:48:51.994 --> 00:48:53.694 sure there's preclinical pharmacology
NOTE Confidence: 0.9941829

00:48:53.994 --> 00:48:55.515 that shows that that eleven
NOTE Confidence: 0.9941829

00:48:55.515 --> 00:48:56.015 hydroxy
NOTE Confidence: 0.8035159

00:48:56.395 --> 00:48:57.454 delta eight metabolite
NOTE Confidence: 0.99953616

00:48:57.755 --> 00:48:59.030 is also a psychoactive
NOTE Confidence: 0.9997826

00:48:59.730 --> 00:49:00.230 compound
NOTE Confidence: 0.97602385

00:49:01.010 --> 00:49:02.790 similar to the delta nine.
NOTE Confidence: 0.9289285

00:49:03.810 --> 00:49:04.310 Great.
NOTE Confidence: 0.9587265

00:49:04.690 --> 00:49:06.130 We have someone at at
NOTE Confidence: 0.9587265

00:49:06.130 --> 00:49:07.489 Yale who's actually doing some
NOTE Confidence: 0.9587265

00:49:07.489 --> 00:49:09.170 work preclinical work with that

NOTE Confidence: 0.9587265
00:49:09.330 --> 00:49:11.330 delta eight, and that's Al
NOTE Confidence: 0.9587265
00:49:11.330 --> 00:49:12.370 k. Al, are you on
NOTE Confidence: 0.9587265
00:49:12.370 --> 00:49:13.030 the call?
NOTE Confidence: 0.95790845
00:49:15.305 --> 00:49:16.904 Thought I saw his name,
NOTE Confidence: 0.9903138
00:49:17.224 --> 00:49:18.204 on the call. Anyway,
NOTE Confidence: 0.94236594
00:49:19.144 --> 00:49:20.585 I have some methods questions
NOTE Confidence: 0.94236594
00:49:20.585 --> 00:49:21.385 for you if you don't
NOTE Confidence: 0.94236594
00:49:21.385 --> 00:49:22.924 mind. And one is,
NOTE Confidence: 0.9903366
00:49:24.505 --> 00:49:26.344 do you use a some
NOTE Confidence: 0.9903366
00:49:26.344 --> 00:49:27.244 kind of paste
NOTE Confidence: 0.9940707
00:49:28.820 --> 00:49:30.760 smoking procedure in your experiments?
NOTE Confidence: 0.97981775
00:49:31.700 --> 00:49:32.739 So we do not use
NOTE Confidence: 0.97981775
00:49:32.739 --> 00:49:34.920 a paste smoking procedure, and
NOTE Confidence: 0.97981775
00:49:34.980 --> 00:49:36.360 we tried that
NOTE Confidence: 0.95712185
00:49:37.219 --> 00:49:38.660 early on in our lab.
NOTE Confidence: 0.95712185

00:49:38.660 --> 00:49:40.100 And we found that when
NOTE Confidence: 0.95712185

00:49:40.100 --> 00:49:42.185 we did, like, the Fulton
NOTE Confidence: 0.95712185

00:49:42.185 --> 00:49:43.325 paste puff procedure,
NOTE Confidence: 0.9809094

00:49:45.225 --> 00:49:47.065 more often than not, it
NOTE Confidence: 0.9809094

00:49:47.065 --> 00:49:48.685 was aversive to the participants,
NOTE Confidence: 0.9809094

00:49:48.825 --> 00:49:50.025 and they would start coughing
NOTE Confidence: 0.9809094

00:49:50.025 --> 00:49:51.545 and choking. And then they
NOTE Confidence: 0.9809094

00:49:51.545 --> 00:49:53.245 couldn't take the next puff.
NOTE Confidence: 0.9902315

00:49:53.880 --> 00:49:55.239 And we also had a
NOTE Confidence: 0.9902315

00:49:55.239 --> 00:49:57.160 couple instances where people started
NOTE Confidence: 0.9902315

00:49:57.160 --> 00:49:57.660 hyperventilating.
NOTE Confidence: 0.9970481

00:49:58.760 --> 00:49:59.260 And
NOTE Confidence: 0.99923456

00:49:59.719 --> 00:50:00.219 we
NOTE Confidence: 0.91911477

00:50:01.960 --> 00:50:03.880 we abandoned that and moved
NOTE Confidence: 0.91911477

00:50:03.880 --> 00:50:05.980 to a a bottle where
NOTE Confidence: 0.9652685

00:50:06.335 --> 00:50:07.775 we have a defined period

NOTE Confidence: 0.9652685
00:50:07.775 --> 00:50:09.075 of time that the participants
NOTE Confidence: 0.9652685
00:50:09.295 --> 00:50:10.974 have to consume the entire
NOTE Confidence: 0.9652685
00:50:10.974 --> 00:50:12.015 dose, but they could do
NOTE Confidence: 0.9652685
00:50:12.015 --> 00:50:13.315 it at their own pace.
NOTE Confidence: 0.98578286
00:50:14.255 --> 00:50:15.454 Okay. But they still have
NOTE Confidence: 0.98578286
00:50:15.454 --> 00:50:15.954 some,
NOTE Confidence: 0.780023
00:50:16.335 --> 00:50:17.795 they they still window,
NOTE Confidence: 0.9605534
00:50:18.094 --> 00:50:19.855 a temporal window by which
NOTE Confidence: 0.9605534
00:50:19.855 --> 00:50:21.055 they have to consume the
NOTE Confidence: 0.9605534
00:50:21.055 --> 00:50:21.555 drug.
NOTE Confidence: 0.9508322
00:50:22.059 --> 00:50:23.819 And we do kind of
NOTE Confidence: 0.9508322
00:50:23.819 --> 00:50:24.319 model
NOTE Confidence: 0.9987043
00:50:25.099 --> 00:50:25.599 dosing
NOTE Confidence: 0.99761647
00:50:25.980 --> 00:50:27.119 prior to experiments
NOTE Confidence: 0.9342362
00:50:27.420 --> 00:50:29.180 to figure out, well, okay.
NOTE Confidence: 0.9342362

00:50:29.180 --> 00:50:30.539 We use a plunger to
NOTE Confidence: 0.9342362

00:50:30.539 --> 00:50:31.520 kind of pull,
NOTE Confidence: 0.95761544

00:50:32.700 --> 00:50:33.440 pull doses,
NOTE Confidence: 0.9987138

00:50:34.525 --> 00:50:35.645 to see about how many
NOTE Confidence: 0.9987138

00:50:35.645 --> 00:50:36.925 puffs we think it's gonna
NOTE Confidence: 0.9987138

00:50:36.925 --> 00:50:38.225 take the average person
NOTE Confidence: 0.7911699

00:50:38.685 --> 00:50:39.185 to,
NOTE Confidence: 0.99638206

00:50:39.645 --> 00:50:40.785 deplete the drug.
NOTE Confidence: 0.979842

00:50:41.165 --> 00:50:42.364 And then the other thing
NOTE Confidence: 0.979842

00:50:42.364 --> 00:50:43.805 that we do is because
NOTE Confidence: 0.979842

00:50:43.805 --> 00:50:44.305 individuals
NOTE Confidence: 0.99907416

00:50:44.844 --> 00:50:45.585 take different,
NOTE Confidence: 0.9969318

00:50:45.965 --> 00:50:47.645 you know, volumes of of
NOTE Confidence: 0.9969318

00:50:47.645 --> 00:50:48.145 puffs,
NOTE Confidence: 0.9995592

00:50:48.860 --> 00:50:50.780 We have that filter to
NOTE Confidence: 0.9995592

00:50:50.780 --> 00:50:51.280 ensure

NOTE Confidence: 0.9856974
00:50:51.980 --> 00:50:52.960 that, you know, they're
NOTE Confidence: 0.9463173
00:50:53.420 --> 00:50:54.000 we're blinding
NOTE Confidence: 0.98897076
00:50:54.380 --> 00:50:56.060 the placebo versus the active
NOTE Confidence: 0.98897076
00:50:56.060 --> 00:50:57.760 drug to the extent possible.
NOTE Confidence: 0.94940186
00:50:58.060 --> 00:50:59.420 And so we'll ballpark and
NOTE Confidence: 0.94940186
00:50:59.420 --> 00:51:00.940 we'll say, okay. We think
NOTE Confidence: 0.94940186
00:51:00.940 --> 00:51:02.380 most people should deplete this
NOTE Confidence: 0.94940186
00:51:02.380 --> 00:51:04.395 dose by fifteen puffs. So
NOTE Confidence: 0.94940186
00:51:04.475 --> 00:51:05.755 So we tell everybody, alright.
NOTE Confidence: 0.94940186
00:51:05.755 --> 00:51:07.114 You've got ten minutes to
NOTE Confidence: 0.94940186
00:51:07.114 --> 00:51:08.475 take fifteen puffs off of
NOTE Confidence: 0.94940186
00:51:08.475 --> 00:51:09.135 this thing.
NOTE Confidence: 0.98426884
00:51:09.594 --> 00:51:11.114 And then the last puff,
NOTE Confidence: 0.98426884
00:51:11.114 --> 00:51:13.215 they exhale into ambient air.
NOTE Confidence: 0.98426884
00:51:13.435 --> 00:51:15.375 And if the study participant
NOTE Confidence: 0.9995448

00:51:15.675 --> 00:51:17.135 sees any exhausted
NOTE Confidence: 0.98981065

00:51:18.150 --> 00:51:19.270 vapor, they tell them to
NOTE Confidence: 0.98981065

00:51:19.270 --> 00:51:20.489 take a few more puffs.
NOTE Confidence: 0.98036945

00:51:21.190 --> 00:51:22.469 If they don't see any
NOTE Confidence: 0.98036945

00:51:22.469 --> 00:51:23.910 exhausted vapor, then they say,
NOTE Confidence: 0.98036945

00:51:23.910 --> 00:51:25.349 alright. Dosing's done. We move
NOTE Confidence: 0.98036945

00:51:25.349 --> 00:51:27.049 on to the next, thing.
NOTE Confidence: 0.99567944

00:51:28.069 --> 00:51:28.569 Great.
NOTE Confidence: 0.98173106

00:51:30.735 --> 00:51:31.475 Other questions?
NOTE Confidence: 0.98666614

00:51:32.015 --> 00:51:33.135 Yeah. I had a question.
NOTE Confidence: 0.98666614

00:51:33.135 --> 00:51:34.655 This is Mohini Ranganathan. Thank
NOTE Confidence: 0.98666614

00:51:34.655 --> 00:51:36.095 you. That was, such an,
NOTE Confidence: 0.98666614

00:51:36.255 --> 00:51:37.715 such an interesting talk.
NOTE Confidence: 0.9736222

00:51:38.815 --> 00:51:40.755 Two questions, actually. One is
NOTE Confidence: 0.59179586

00:51:41.855 --> 00:51:42.755 given that
NOTE Confidence: 0.9866953

00:51:43.230 --> 00:51:43.730 maybe

NOTE Confidence: 0.9809331
00:51:44.150 --> 00:51:44.650 overlapping,
NOTE Confidence: 0.9963582
00:51:45.630 --> 00:51:46.130 pharmacodynamic
NOTE Confidence: 0.99040914
00:51:46.750 --> 00:51:47.250 effects,
NOTE Confidence: 0.94399345
00:51:49.469 --> 00:51:50.610 do do you expect
NOTE Confidence: 0.9558913
00:51:51.070 --> 00:51:52.510 people just to have cross
NOTE Confidence: 0.9558913
00:51:52.510 --> 00:51:53.469 tolerance, you know, if they
NOTE Confidence: 0.9558913
00:51:53.469 --> 00:51:54.830 are regularly using t h
NOTE Confidence: 0.9558913
00:51:55.070 --> 00:51:56.270 delta nine t h c
NOTE Confidence: 0.9558913
00:51:56.270 --> 00:51:57.469 that they would have different
NOTE Confidence: 0.9558913
00:51:57.469 --> 00:51:58.955 effects with delta eight, or
NOTE Confidence: 0.9558913
00:51:58.955 --> 00:52:00.094 have you seen any,
NOTE Confidence: 0.99707574
00:52:01.035 --> 00:52:02.475 pattern like that? I I
NOTE Confidence: 0.99707574
00:52:02.475 --> 00:52:03.515 think you said most of
NOTE Confidence: 0.99707574
00:52:03.515 --> 00:52:04.895 your participants were
NOTE Confidence: 0.9415644
00:52:05.675 --> 00:52:07.355 very infrequent users, but just
NOTE Confidence: 0.9415644

00:52:07.355 --> 00:52:08.795 what what you're thinking around

NOTE Confidence: 0.9415644

00:52:08.795 --> 00:52:10.155 that is. And the second

NOTE Confidence: 0.9415644

00:52:10.155 --> 00:52:11.835 is whether you're seeing any,

NOTE Confidence: 0.9415644

00:52:12.155 --> 00:52:13.375 saturated differences.

NOTE Confidence: 0.99126995

00:52:14.210 --> 00:52:15.730 Yeah. So I would full

NOTE Confidence: 0.99126995

00:52:15.890 --> 00:52:17.410 based on the data we

NOTE Confidence: 0.99126995

00:52:17.410 --> 00:52:18.950 collected, I would fully expect,

NOTE Confidence: 0.9830024

00:52:19.969 --> 00:52:21.410 if you have tolerance to

NOTE Confidence: 0.9830024

00:52:21.410 --> 00:52:22.869 delta nine, you'd have tolerance

NOTE Confidence: 0.9830024

00:52:23.010 --> 00:52:24.450 to delta eight. So everything

NOTE Confidence: 0.9830024

00:52:24.450 --> 00:52:25.589 that I've seen preclinically

NOTE Confidence: 0.941545

00:52:25.969 --> 00:52:27.485 and in our lab is

NOTE Confidence: 0.941545

00:52:27.485 --> 00:52:29.565 that it's all CB one

NOTE Confidence: 0.941545

00:52:29.565 --> 00:52:30.545 receptor mediated.

NOTE Confidence: 0.9915829

00:52:31.485 --> 00:52:32.605 I don't think there's any

NOTE Confidence: 0.9915829

00:52:32.605 --> 00:52:34.285 unique pharmacology to delta eight

NOTE Confidence: 0.9915829
00:52:34.285 --> 00:52:35.025 through another
NOTE Confidence: 0.9524164
00:52:35.405 --> 00:52:35.905 neurotransmitter
NOTE Confidence: 0.9914271
00:52:36.285 --> 00:52:37.665 system or receptor system.
NOTE Confidence: 0.97024506
00:52:38.844 --> 00:52:40.545 And, again, qualitatively,
NOTE Confidence: 0.99967873
00:52:41.085 --> 00:52:42.719 the types of drug effects
NOTE Confidence: 0.99967873
00:52:42.719 --> 00:52:43.700 that they report
NOTE Confidence: 0.9362794
00:52:44.160 --> 00:52:45.120 are the same. So that
NOTE Confidence: 0.9362794
00:52:45.120 --> 00:52:46.800 we didn't and we our,
NOTE Confidence: 0.985304
00:52:47.120 --> 00:52:48.080 you know, I showed you
NOTE Confidence: 0.985304
00:52:48.080 --> 00:52:48.660 a representative
NOTE Confidence: 0.9087634
00:52:49.520 --> 00:52:50.020 few,
NOTE Confidence: 0.9987037
00:52:50.719 --> 00:52:51.219 subjective
NOTE Confidence: 0.7777175
00:52:51.600 --> 00:52:52.100 effect,
NOTE Confidence: 0.9313967
00:52:52.800 --> 00:52:53.860 categories, but
NOTE Confidence: 0.9945911
00:52:54.335 --> 00:52:56.275 our visual analog scale
NOTE Confidence: 0.9972811

00:52:56.654 --> 00:52:58.674 consists of twenty five different,
NOTE Confidence: 0.9978382
00:52:59.775 --> 00:53:00.275 adjectives.
NOTE Confidence: 0.9986896
00:53:01.135 --> 00:53:02.414 Do you feel anxious? Do
NOTE Confidence: 0.9986896
00:53:02.414 --> 00:53:03.295 you feel sad? Do you
NOTE Confidence: 0.9986896
00:53:03.295 --> 00:53:04.575 feel happy? Do you feel
NOTE Confidence: 0.9986896
00:53:04.575 --> 00:53:05.075 invigorated?
NOTE Confidence: 0.9995104
00:53:05.375 --> 00:53:06.674 Do you feel sedated?
NOTE Confidence: 0.9982893
00:53:07.535 --> 00:53:08.035 And
NOTE Confidence: 0.9993987
00:53:08.460 --> 00:53:08.960 there
NOTE Confidence: 0.98248166
00:53:09.420 --> 00:53:11.040 was none of those items
NOTE Confidence: 0.99975264
00:53:11.340 --> 00:53:13.280 across twenty five different things
NOTE Confidence: 0.98982126
00:53:13.820 --> 00:53:15.920 where we saw people consistently
NOTE Confidence: 0.98982126
00:53:16.060 --> 00:53:17.660 saying, I feel this for
NOTE Confidence: 0.98982126
00:53:17.660 --> 00:53:19.020 this one, but not that
NOTE Confidence: 0.98982126
00:53:19.020 --> 00:53:20.480 one. It was all
NOTE Confidence: 0.9998036
00:53:21.575 --> 00:53:22.075 relatively

NOTE Confidence: 0.98266906
00:53:22.535 --> 00:53:24.075 the same kind of experience.
NOTE Confidence: 0.99177843
00:53:24.614 --> 00:53:25.815 And we really didn't have
NOTE Confidence: 0.99177843
00:53:25.815 --> 00:53:27.575 anybody say, oh, this feels
NOTE Confidence: 0.99177843
00:53:27.575 --> 00:53:29.494 different. This is definitely blah
NOTE Confidence: 0.99177843
00:53:29.494 --> 00:53:30.474 blah blah blah blah.
NOTE Confidence: 0.97491395
00:53:30.934 --> 00:53:32.135 Now what we did have
NOTE Confidence: 0.97491395
00:53:32.135 --> 00:53:33.750 is people say, oh, that
NOTE Confidence: 0.97491395
00:53:33.989 --> 00:53:35.670 felt hotter or that felt
NOTE Confidence: 0.97491395
00:53:35.670 --> 00:53:37.370 harsher. That must be different.
NOTE Confidence: 0.94211787
00:53:39.510 --> 00:53:41.130 Or that but
NOTE Confidence: 0.9646924
00:53:41.430 --> 00:53:42.390 we we we're like I
NOTE Confidence: 0.9646924
00:53:42.390 --> 00:53:44.170 said, we're still going back
NOTE Confidence: 0.950204
00:53:44.790 --> 00:53:46.489 in response to Godfrey's comment.
NOTE Confidence: 0.950204
00:53:46.575 --> 00:53:47.695 We're still going back and
NOTE Confidence: 0.950204
00:53:47.695 --> 00:53:48.655 looking to see if there
NOTE Confidence: 0.950204

00:53:48.655 --> 00:53:50.035 was actually any,
NOTE Confidence: 0.9995049

00:53:51.535 --> 00:53:52.035 consistency
NOTE Confidence: 0.9983047

00:53:52.655 --> 00:53:54.015 in terms of people saying
NOTE Confidence: 0.9983047

00:53:54.015 --> 00:53:55.614 something was different to the
NOTE Confidence: 0.9983047

00:53:55.614 --> 00:53:57.214 actual drug that was delivered
NOTE Confidence: 0.9983047

00:53:57.214 --> 00:53:59.075 on those particular session days.
NOTE Confidence: 0.9641874

00:54:01.300 --> 00:54:02.660 I think Mohini also asked
NOTE Confidence: 0.9641874

00:54:02.660 --> 00:54:03.880 you about sex differences.
NOTE Confidence: 0.8673238

00:54:04.339 --> 00:54:04.739 Ah, yes.
NOTE Confidence: 0.9920031

00:54:05.700 --> 00:54:07.560 So I don't recall
NOTE Confidence: 0.9885784

00:54:08.099 --> 00:54:09.300 what we have in terms
NOTE Confidence: 0.9885784

00:54:09.300 --> 00:54:10.579 of sex differences for the
NOTE Confidence: 0.9885784

00:54:10.579 --> 00:54:11.560 delta eight,
NOTE Confidence: 0.96329296

00:54:12.420 --> 00:54:12.920 experiments,
NOTE Confidence: 0.9660775

00:54:13.300 --> 00:54:14.819 and I apologize for that.
NOTE Confidence: 0.9660775

00:54:14.819 --> 00:54:15.319 So,

NOTE Confidence: 0.99164563
00:54:16.395 --> 00:54:18.395 we didn't have large enough
NOTE Confidence: 0.99164563
00:54:18.395 --> 00:54:19.995 sample sizes in the first
NOTE Confidence: 0.99164563
00:54:19.995 --> 00:54:21.675 two studies to do those
NOTE Confidence: 0.99164563
00:54:21.675 --> 00:54:22.175 analyses,
NOTE Confidence: 0.99979573
00:54:23.594 --> 00:54:24.094 in
NOTE Confidence: 0.99820584
00:54:24.715 --> 00:54:26.415 in our our initial papers.
NOTE Confidence: 0.9998372
00:54:26.875 --> 00:54:28.235 Now that we have two
NOTE Confidence: 0.9998372
00:54:28.235 --> 00:54:28.735 experiments
NOTE Confidence: 0.99467164
00:54:29.275 --> 00:54:29.775 by
NOTE Confidence: 0.9886054
00:54:30.390 --> 00:54:31.849 route each route of administration
NOTE Confidence: 0.9886054
00:54:31.989 --> 00:54:33.609 and four studies total,
NOTE Confidence: 0.9868955
00:54:34.069 --> 00:54:35.190 we should have a large
NOTE Confidence: 0.9868955
00:54:35.190 --> 00:54:36.309 enough sample size to go
NOTE Confidence: 0.9868955
00:54:36.309 --> 00:54:37.190 back and look at sex
NOTE Confidence: 0.9868955
00:54:37.190 --> 00:54:38.630 differences, and that will probably
NOTE Confidence: 0.9868955

00:54:38.630 --> 00:54:40.069 be a secondary analysis that
NOTE Confidence: 0.9868955

00:54:40.069 --> 00:54:41.210 we'll do with this dataset.
NOTE Confidence: 0.99955654

00:54:42.869 --> 00:54:43.690 Thank you.
NOTE Confidence: 0.94688433

00:54:44.545 --> 00:54:45.665 And I fully expect to
NOTE Confidence: 0.94688433

00:54:45.665 --> 00:54:46.725 see sex differences
NOTE Confidence: 0.97497076

00:54:47.185 --> 00:54:48.465 because we see it every
NOTE Confidence: 0.97497076

00:54:48.465 --> 00:54:49.505 time that we've looked for
NOTE Confidence: 0.97497076

00:54:49.505 --> 00:54:50.785 them in our other cannabis
NOTE Confidence: 0.97497076

00:54:50.785 --> 00:54:51.925 and delta nine work.
NOTE Confidence: 0.9843228

00:54:52.225 --> 00:54:53.585 And what direction are you
NOTE Confidence: 0.9843228

00:54:53.585 --> 00:54:55.364 expecting? We usually see,
NOTE Confidence: 0.9961482

00:54:56.480 --> 00:54:58.099 higher levels of eleven hydroxy
NOTE Confidence: 0.998101

00:54:58.480 --> 00:55:00.160 in females and stronger drug
NOTE Confidence: 0.998101

00:55:00.160 --> 00:55:00.660 effects.
NOTE Confidence: 0.8206563

00:55:02.880 --> 00:55:03.380 One,
NOTE Confidence: 0.90665895

00:55:03.920 --> 00:55:05.520 can I Sorry? Can I

NOTE Confidence: 0.90665895
00:55:05.520 --> 00:55:06.880 add one? Okay. In I
NOTE Confidence: 0.90665895
00:55:06.880 --> 00:55:08.239 just wanna add in normally
NOTE Confidence: 0.90665895
00:55:08.239 --> 00:55:09.520 cycling females. Is that right?
NOTE Confidence: 0.90665895
00:55:09.520 --> 00:55:10.559 Is that is that what
NOTE Confidence: 0.90665895
00:55:10.559 --> 00:55:12.020 we usually see that in?
NOTE Confidence: 0.9995658
00:55:12.645 --> 00:55:13.145 Yes.
NOTE Confidence: 0.8224059
00:55:15.364 --> 00:55:16.665 Thanks for the clarification.
NOTE Confidence: 0.99514675
00:55:17.525 --> 00:55:19.385 So, Ryan, one question
NOTE Confidence: 0.9758398
00:55:19.765 --> 00:55:21.285 about the implications of this
NOTE Confidence: 0.9758398
00:55:21.285 --> 00:55:21.785 new,
NOTE Confidence: 0.82722175
00:55:24.325 --> 00:55:24.825 bill,
NOTE Confidence: 0.9703396
00:55:25.469 --> 00:55:26.690 from a few days ago.
NOTE Confidence: 0.9703396
00:55:26.830 --> 00:55:28.030 You said something like you
NOTE Confidence: 0.9703396
00:55:28.030 --> 00:55:29.310 think that this could migrate
NOTE Confidence: 0.9703396
00:55:29.310 --> 00:55:30.830 into the black market. And
NOTE Confidence: 0.9703396

00:55:30.830 --> 00:55:31.950 so my question for you
NOTE Confidence: 0.9703396

00:55:31.950 --> 00:55:32.609 would be,
NOTE Confidence: 0.9966313

00:55:34.350 --> 00:55:35.250 why would anyone
NOTE Confidence: 0.9613496

00:55:36.030 --> 00:55:36.530 wanna,
NOTE Confidence: 0.92499864

00:55:37.310 --> 00:55:39.969 spend money selling delta eight
NOTE Confidence: 0.9021738

00:55:40.475 --> 00:55:41.915 if there if then really
NOTE Confidence: 0.9021738

00:55:41.915 --> 00:55:43.935 no differences between the two?
NOTE Confidence: 0.98087907

00:55:45.755 --> 00:55:46.255 Cost.
NOTE Confidence: 0.9181584

00:55:46.795 --> 00:55:48.815 Cost. I see. Yeah. So,
NOTE Confidence: 0.98957634

00:55:49.355 --> 00:55:50.635 again, I think it's one
NOTE Confidence: 0.98957634

00:55:50.635 --> 00:55:52.175 of those things where
NOTE Confidence: 0.9998523

00:55:52.989 --> 00:55:53.489 we
NOTE Confidence: 0.9938835

00:55:53.950 --> 00:55:56.450 have a process here where,
NOTE Confidence: 0.9880221

00:55:57.469 --> 00:55:57.969 CBD,
NOTE Confidence: 0.98083633

00:55:58.350 --> 00:56:00.110 which is abundant and very,
NOTE Confidence: 0.98083633

00:56:00.110 --> 00:56:00.930 very cheap,

NOTE Confidence: 0.87547886
00:56:01.390 --> 00:56:03.090 there's a a relatively
NOTE Confidence: 0.9708906
00:56:03.550 --> 00:56:04.750 simple from what I've been
NOTE Confidence: 0.9708906
00:56:04.750 --> 00:56:06.625 told by smarter people than
NOTE Confidence: 0.9708906
00:56:06.625 --> 00:56:07.744 me and people who know
NOTE Confidence: 0.9708906
00:56:07.744 --> 00:56:08.884 analytical chemistry.
NOTE Confidence: 0.984544
00:56:10.065 --> 00:56:11.045 There's a relatively
NOTE Confidence: 0.9368613
00:56:11.344 --> 00:56:13.285 simple process of of synthetically
NOTE Confidence: 0.9368613
00:56:13.505 --> 00:56:15.025 converting CBD to delta A
NOTE Confidence: 0.9368613
00:56:15.025 --> 00:56:15.525 THC.
NOTE Confidence: 0.9483256
00:56:16.704 --> 00:56:18.819 And CBD is cheap, and
NOTE Confidence: 0.9483256
00:56:18.819 --> 00:56:20.660 the process in of converting
NOTE Confidence: 0.9483256
00:56:20.660 --> 00:56:22.359 it is cheap and relatively
NOTE Confidence: 0.9483256
00:56:22.420 --> 00:56:23.640 straightforward. So
NOTE Confidence: 0.9988346
00:56:23.940 --> 00:56:25.799 while most of the US
NOTE Confidence: 0.9988346
00:56:25.940 --> 00:56:26.440 has
NOTE Confidence: 0.9996991

00:56:27.140 --> 00:56:27.640 legal
NOTE Confidence: 0.9993415

00:56:28.020 --> 00:56:30.200 cannabis markets for adult use,
NOTE Confidence: 0.9300985

00:56:31.055 --> 00:56:32.655 the products can be quite
NOTE Confidence: 0.9300985

00:56:32.655 --> 00:56:34.175 costly. And and a delta
NOTE Confidence: 0.9300985

00:56:34.175 --> 00:56:34.675 eight,
NOTE Confidence: 0.98431087

00:56:35.775 --> 00:56:37.855 market exists in Europe where
NOTE Confidence: 0.98431087

00:56:37.855 --> 00:56:39.935 that doesn't exist now. It's
NOTE Confidence: 0.98431087

00:56:39.935 --> 00:56:41.315 not very robust,
NOTE Confidence: 0.99925125

00:56:42.175 --> 00:56:43.775 but they also never had
NOTE Confidence: 0.99925125

00:56:43.775 --> 00:56:44.995 a robust market.
NOTE Confidence: 0.95595413

00:56:45.440 --> 00:56:47.280 And so I think right
NOTE Confidence: 0.95595413

00:56:47.280 --> 00:56:47.780 now,
NOTE Confidence: 0.96428376

00:56:48.880 --> 00:56:50.400 you're and it'll it'll be
NOTE Confidence: 0.96428376

00:56:50.400 --> 00:56:51.680 curious to see what happens,
NOTE Confidence: 0.96428376

00:56:51.680 --> 00:56:52.880 but I'm the way I'm
NOTE Confidence: 0.96428376

00:56:52.880 --> 00:56:54.000 looking at it right now

NOTE Confidence: 0.96428376
00:56:54.000 --> 00:56:55.600 is that there is a
NOTE Confidence: 0.96428376
00:56:55.600 --> 00:56:56.820 sizable industry
NOTE Confidence: 0.99865437
00:56:57.360 --> 00:56:58.960 that already knows how to
NOTE Confidence: 0.99865437
00:56:58.960 --> 00:56:59.620 do this.
NOTE Confidence: 0.99554265
00:57:00.065 --> 00:57:00.885 There's a
NOTE Confidence: 0.8842002
00:57:01.265 --> 00:57:01.765 sizable
NOTE Confidence: 0.99819696
00:57:02.145 --> 00:57:03.845 market in terms of consumers
NOTE Confidence: 0.99819696
00:57:04.065 --> 00:57:05.585 that have kind of grown
NOTE Confidence: 0.99819696
00:57:05.585 --> 00:57:07.364 accustomed to using these products.
NOTE Confidence: 0.99379134
00:57:07.905 --> 00:57:09.505 The infrastructure for making them
NOTE Confidence: 0.99379134
00:57:09.505 --> 00:57:10.785 is in place, and these
NOTE Confidence: 0.99379134
00:57:10.785 --> 00:57:11.285 companies
NOTE Confidence: 0.9984371
00:57:11.985 --> 00:57:13.505 are facing going out of
NOTE Confidence: 0.9984371
00:57:13.505 --> 00:57:14.005 business
NOTE Confidence: 0.98753357
00:57:14.390 --> 00:57:16.150 if they follow the the
NOTE Confidence: 0.98753357

00:57:16.150 --> 00:57:16.810 the law.
NOTE Confidence: 0.9973336
00:57:17.190 --> 00:57:18.470 So the question for me
NOTE Confidence: 0.9973336
00:57:18.470 --> 00:57:18.970 becomes
NOTE Confidence: 0.95476604
00:57:19.430 --> 00:57:21.110 a year from now, if
NOTE Confidence: 0.95476604
00:57:21.110 --> 00:57:22.230 the language in the bill
NOTE Confidence: 0.95476604
00:57:22.230 --> 00:57:23.210 stays the same,
NOTE Confidence: 0.9991528
00:57:23.910 --> 00:57:25.590 do those companies find something
NOTE Confidence: 0.9991528
00:57:25.590 --> 00:57:26.490 else to make?
NOTE Confidence: 0.9900596
00:57:26.925 --> 00:57:28.125 Do they keep making what
NOTE Confidence: 0.9900596
00:57:28.125 --> 00:57:29.425 they're making and
NOTE Confidence: 0.9752187
00:57:30.285 --> 00:57:32.045 challenge whether or not the
NOTE Confidence: 0.9752187
00:57:32.045 --> 00:57:33.725 DEA is going to enforce
NOTE Confidence: 0.9752187
00:57:33.725 --> 00:57:34.845 the law? Because if you
NOTE Confidence: 0.9752187
00:57:34.845 --> 00:57:36.685 think about it, right, at
NOTE Confidence: 0.9752187
00:57:36.685 --> 00:57:38.145 the federal level,
NOTE Confidence: 0.9995031
00:57:38.845 --> 00:57:40.705 all of the state legal

NOTE Confidence: 0.9995031
00:57:40.765 --> 00:57:41.265 programs
NOTE Confidence: 0.9990219
00:57:41.965 --> 00:57:42.465 are
NOTE Confidence: 0.9877115
00:57:43.140 --> 00:57:44.740 against federal law and are
NOTE Confidence: 0.9877115
00:57:44.740 --> 00:57:46.579 not being enforced. It's it
NOTE Confidence: 0.9877115
00:57:46.740 --> 00:57:48.099 so it really becomes a
NOTE Confidence: 0.9877115
00:57:48.099 --> 00:57:49.940 question of allocation of DEA
NOTE Confidence: 0.9877115
00:57:49.940 --> 00:57:50.440 resources
NOTE Confidence: 0.9936157
00:57:50.819 --> 00:57:52.099 and whether this is an
NOTE Confidence: 0.9936157
00:57:52.099 --> 00:57:53.539 industry they're going to go
NOTE Confidence: 0.9936157
00:57:53.539 --> 00:57:54.039 after.
NOTE Confidence: 0.9349048
00:57:55.859 --> 00:57:56.980 And and, again, it it
NOTE Confidence: 0.9349048
00:57:56.980 --> 00:57:58.599 may be that these
NOTE Confidence: 0.99918604
00:57:58.935 --> 00:58:00.955 businesses then apply for licenses
NOTE Confidence: 0.99918604
00:58:01.095 --> 00:58:01.595 to
NOTE Confidence: 0.99936897
00:58:01.895 --> 00:58:03.015 legally do it at the
NOTE Confidence: 0.99936897

00:58:03.015 --> 00:58:03.755 state level.
NOTE Confidence: 0.99960905
00:58:04.215 --> 00:58:05.835 I mean, that's another possibility
NOTE Confidence: 0.99960905
00:58:06.055 --> 00:58:06.555 here.
NOTE Confidence: 0.97806334
00:58:07.175 --> 00:58:08.775 I I really don't know
NOTE Confidence: 0.97806334
00:58:08.775 --> 00:58:10.455 which direction it's gonna go,
NOTE Confidence: 0.97806334
00:58:10.455 --> 00:58:12.235 but I'd be shocked if
NOTE Confidence: 0.9844014
00:58:12.660 --> 00:58:14.579 delta eight THC simply just
NOTE Confidence: 0.9844014
00:58:14.579 --> 00:58:15.319 goes away.
NOTE Confidence: 0.8328105
00:58:16.339 --> 00:58:16.839 Great.
NOTE Confidence: 0.9816041
00:58:19.700 --> 00:58:20.900 Thank you very much for
NOTE Confidence: 0.9816041
00:58:20.900 --> 00:58:21.940 a great talk. I'm sure
NOTE Confidence: 0.9816041
00:58:21.940 --> 00:58:22.900 people are gonna reach out
NOTE Confidence: 0.9816041
00:58:22.900 --> 00:58:23.960 to you. I will also
NOTE Confidence: 0.9816041
00:58:24.020 --> 00:58:24.900 reach out to you about
NOTE Confidence: 0.9816041
00:58:24.900 --> 00:58:26.365 some questions I have about
NOTE Confidence: 0.9816041
00:58:26.365 --> 00:58:28.045 methodology. But thanks again, Ryan.

NOTE Confidence: 0.9816041

00:58:28.045 --> 00:58:29.405 This is great. Really appreciate

NOTE Confidence: 0.9816041

00:58:29.405 --> 00:58:30.765 it, Sarah. Thanks for the

NOTE Confidence: 0.9816041

00:58:30.765 --> 00:58:32.765 invitation, and happy, rest of

NOTE Confidence: 0.9816041

00:58:32.765 --> 00:58:33.905 the afternoon, everybody.

NOTE Confidence: 0.8358379

00:58:34.525 --> 00:58:35.665 Thank you very much.