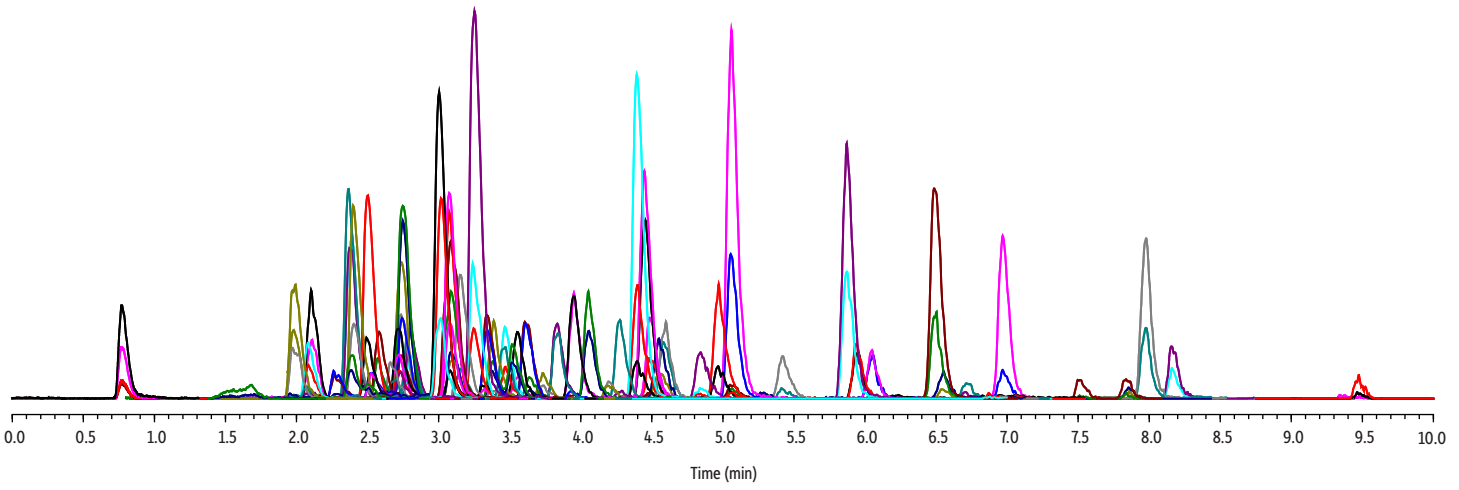
California Cannabis Pesticides and Mycotoxins in Chocolate on Raptor ARC-18

- LC amenable pesticides and mycotoxins regulated by California (2021).
- Quantify low ng/g concentrations in cannabis edibles.



LC_GN0675

Column	Raptor ARC-18 (cat.# 9314A12)
Dimensions:	100 mm x 2.1 mm ID
Particle Size:	2.7 µm
Pore Size:	90 Å
Guard Column:	Raptor ARC-18 EXP guard column cartridge 5 mm, 2.1 mm ID, 2.7 µm (cat.# 9314A0252)
Temp.:	40 °C
Standard/Sample	California pesticide standard #1 (cat.# 34124) California pesticide standard #2 (cat.# 34125) California pesticide standard #3 (cat.# 34126) California pesticide standard #4 (cat.# 34127) California pesticide standard #5 (cat.# 34128) California pesticide standard #6 (cat.# 34129) Dimethoate-d6 (cat.# 31988) Dichlorvos-d6 (cat.# 31987) Carbaryl-d7 (cat.# 31985) Diazinon-d10 (cat.# 31986) Atrazine-d5 (cat.# 31984) Diuron-d6 (cat.# 31989) Liuron-d6 (cat.# 31990) Aflatoxins standard (cat.# 34121) Ochratoxin A (cat.# 34122) Compounds not present in these mixes were obtained separately.
Diluent:	75:25 Acetonitrile:water
Conc.:	8.8-12.5 ng/mL Expected concentration range (70-100% recovery) in extract of chocolate initially spiked at 100 ng/g.
Inj. Vol.:	2 µL
Mobile Phase	
A:	Water, 2 mM ammonium formate, 0.1% formic acid
B:	Methanol, 2 mM ammonium formate, 0.1% formic acid

Time (min)	Flow (mL/min)	%A	%B
0.00	0.5	95	5
1.5	0.5	35	65
8.5	0.5	5	95
9.5	0.5	0	100
10.5	0.5	0	100
10.6	0.5	95	5
12.0	0.5	95	5

Detector	MS/MS
Ion Mode:	ESI+/ESI-
Mode:	MRM
Instrument	UHPLC
Sample Preparation	Chocolate was pulverized using a SPEX Freezer/Mill grinder, and a 0.5 g sample was fortified with pesticides and mycotoxins at 100 ng/g. A mix of internal standards was added at 200 ng/g. Then, 0.5 mL of isopropyl alcohol was added to the sample. The sample was vortexed for 10 sec or until a homogenous mixture was obtained. Afterwards, 2.5 mL of acetonitrile acidified with acetic acid at 1% v/v was added to the vial. Once again, the mixture was vortexed for 30 sec, and then centrifuged for 5 min at 4300 ×g at room temperature. A total of 2 mL of the supernatant was passed through a 100 mg Resprep C18 SPE cartridge (cat.# 26030). 750 µL of organic extract was mixed with 250 µL of water, and the mix was centrifuged for 5 min at 4 °C to precipitate the undissolved fat. 2 µL of final extract was injected into the LC-MS/MS system.
Notes	Want even better performance when analyzing metal-sensitive compounds? Check out Inert LC columns at www.restek.com/inert.

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	Peaks	tR (min)	Precursor Ion	Product Ion 1	Product Ion 2	Polarity
1.	Daminozide-d6	0.7	167.0	149.3	49.3	+
2.	Daminozide	0.7	161.1	44.1	143.2	+
3.	Acephate	1.7	184.0	143.1	95.1	+
4.	Oxamyl	2.0	237.1	72.1	90.1	+
5.	Flonicamid	2.1	230.1	203.1	174.1	+
6.	Methomyl	2.1	163.1	88.1	106.1	+
7.	Thiamethoxam	2.1	292.0	211.1	181.1	+
8.	Imidacloprid	2.3	256.1	209.1	175.1	+
9.	Mevinphos	2.4	225.1	127.1	193.2	+
10.	Acetamiprid	2.4	223.0	126.1	56.1	+
11.	Dimethoathe-d6	2.4	236.1	205.1	-	+
12.	Dimethoate	2.4	230.0	199.1	125.1	+
13.	Thiacloprid	2.5	253.0	126.0	90.1	+
14.	Aflatoxin G2	2.5	331.2	189.3	115.2	+
15.	Aflatoxin G1	2.5	329.2	243.2	215.3	+
16.	Aldicarb	2.6	116.0	89.2	70.2	+
17.	Aflatoxin B2	2.6	315.3	287.2	243.3	+
18.	Dichlorvos	2.7	220.9	109.1	79.2	+
19.	Dichlorvos-d6	2.7	227.0	115.1	-	+
20.	Aflatoxin B1	2.7	313.2	241.2	128.2	+
21.	Imazalil	2.7	297.0	159.0	201.0	+
22.	Carbofuran	2.7	222.1	123.1	165.2	+
23.	Propoxur	2.7	210.1	111.1	93.1	+
24.	Carbaryl-d7	2.8	209.2	152.2	-	+
25.	Carbaryl	2.8	202.1	145.1	127.1	+
26.	Diuron-d6	3.0	239.1	78.2	-	+
27.	Atrazine-d5	3.0	221.2	179.1	-	+
28.	Naled	3.1	397.8	127.1	109.1	+
29.	Metalaxyl	3.1	280.2	220.2	192.2	+
30.	Spiroxamine	3.1	298.3	144.2	100.2	+
31.	Chlorantraniliprole	3.2	483.9	452.9	285.9	+
32.	Phosmet	3.2	318.0	160.1	77.2	+
33.	Azoxystrobin	3.3	404.0	372.1	344.1	+
34.	Linuron-d6	3.3	255.1	160.1	-	+
35.	Fludioxonil	3.4	247.0	180.0	126.0	-
36.	Methiocarb	3.4	226.1	169.1	121.1	+
37.	Dimethomorph	3.5	388.2	301.2	165.3	+
38.	Boscalid	3.5	342.9	307.1	140.1	+
39.	Paclobutrazol	3.6	294.3	70.1	125.1	+
40.	Malathion	3.6	331.0	127.2	285.2	+
41.	Myclobutanil	3.7	289.1	70.1	125.1	+
42.	Bifenazate	3.7	301.0	198.1	170.2	+
43.	Ochratoxin A	3.8	404.2	239.1	358.3	+
44.	Fenhexamid	3.9	302.1	97.1	55.2	+
45.	Spirotetramat	4.0	374.2	302.1	216.1	+
46.	Ethoprophos	4.1	243.1	131.1	97.1	+
47.	Fipronil	4.1	436.8	331.8	251.9	-
48.	Fenoxycarb	4.2	302.1	88.1	116.1	+
49.	Kresoxim-methyl	4.4	314.2	267.2	222.2	+
50.	Tebuconazole	4.4	308.1	70.1	125.1	+
51.	Diazinon-d10	4.6	315.2	170.2	-	+
52.	Spinosyn A (Spinosad)	4.6	732.4	142.2	98.1	+
53.	Diazinon	4.6	305.1	169.2	153.2	+
54.	Coumaphos	4.7	363.1	227.1	307.1	+
55.	Pyridaben	4.7	365.1	309.2	147.2	+
56.	Propiconazole	4.7	342.0	159.0	69.2	+
57.	Clofentezine	4.8	303.0	138.1	102.1	+
58.	Spinosyn D (Spinosad)	5.0	746.5	142.3	98.4	+
59.	Spinosyn J (Spinetoram)	5.1	748.5	142.3	98.3	+
60.	Trifloxystrobin	5.3	409.2	186.1	145.1	+
61.	Prallethrin	5.3	301.2	123.2	105.2	+
62.	Pyrethrin II	5.5	373.1	161.1	133.2	+
63.	Spinosyn L (Spinetoram)	5.6	760.5	142.2	98.1	+
64.	Piperonyl butoxide	6.0	356.3	177.2	119.2	+
65.	Chlorpyrifos	6.1	349.9	198.0	97.1	+
66.	Hexythiazox	6.2	353.1	228.1	168.1	+
67.	Etoxazole	6.6	360.2	141.1	304.2	+
68.	Spiromesifen	6.7	273.2	255.2	187.2	+
69.	Pyrethrin I	6.9	329.2	161.2	105.2	+
70.	Cyfluthrin (qualifier)	6.9	453.1	193.2	-	+
71.	Cyfluthrin	6.9	451.1	191.2	-	+
72.	Cypermethrin	7.1	433.1	191.0	416.0	+
73.	(E)-Fenpyroximate	7.1	422.2	366.1	138.1	+
74.	*trans*-Permethrin	7.6	408.3	183.2	355.1	+
75.	*cis*-Permethrin	7.9	408.3	183.2	355.1	+
76.	Avermectin B1a	7.9	890.5	305.4	567.4	+
77.	Etofenprox	8.0	394.3	177.2	359.3	+
78.	Bifenthrin	8.2	440.0	181.2	166.2	+
79.	Acequinocyl (precursor ion 1)	9.4	402.3	343.2	189.0	+
80.	Acequinocyl (precursor ion 2)	9.4	386.0	344.2	189.1	+

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