Table S1: Molecular formula, retention time, and mass spectrometry parameters for the target 41 veterinary drugs compounds.

Class	Analyte	Retention time	Molecular formula	Adduct	Precursor m/z	Product ion m/z	Ionization mode
Sulfonamides	Sulfacetamide	6.10	C8H10N2O3S	$[M + H]^+$	215.04849	215.12522, 156.01120, 108.04425,	Positive
	Sulfachloropyridazine	7.03	C10H9ClN4O2S	$[M + H]^+$	285.02075	156.01122, 108.04426, 92.04934	Positive
	Sulfadiazine	6.20	C10H10N4O2S	$[M + H]^+$	251.05972	156.01130, 108.04431, 96.05553	Positive
	Sulfadimethoxine	7.13	C12H14N4O4S	$[M + H]^+$	311.08085	245.10319, 236.03340, 156.07675, 108.04429, 92.04938	Positive
	Sulfadoxine	7.51	C12H14N4O4S	$[M + H]^+$	311.08085	156.01133, 108.04433, 92.04935	Positive
	Sulfaguanidine	4.93	C7H10N4O2S	$[M + H]^+$	215.05972	156.01138, 108.04440, 92.04947, 65.0386	Positive
	Sulfamerazine	6.48	C11H12N4O2S	$[M + H]^+$	265.07537	190.02805, 156.01132, 110.07124, 108.04432, 92.04938	Positive
	Sulfamethazine	6.68	C12H14N4O2S	$[M + H]^+$	279.09102	213.11337, 204.04371, 156.01128,124.08690,108.04430	Positive
	Sulfamethizol	6.56	C9H10N4O2S2	$[M + H]^+$	271.03179	156.01138, 108.04439, 92.04947	Positive
	Sulfamethoxazole	7.15	C10H11N3O3S	$[M + H]^+$	254.05939	156.01137, 108.04439, 92.04950	Positive
	Sulfamethoxypyridazine	6.58	C11H12N4O3S	$[M + H]^+$	281.07029	156.01131, 126.06617, 108.04432, 92.04938	Positive
	Sulfamonomethoxine	6.83	C11H12N4O3S	$[M + H]^+$	281.07029	215.09267, 156.01126, 126.06613, 108.04429, 92.04934	Positive
	Sulfamoxol	6.40	C11H13N3O3S	$[M + H]^+$	268.07504	156.01138, 108.04440, 92.04950	Positive
	Sulfanilamide	5.37	C6H8N2O2S	$[M + H]^+$	173.03792	125.04710, 93.05730	Positive
	Sulfapyridine	6.31	C11H11N3O2S	$[M + H]^+$	250.06447	184.08680, 156.01120, 108.04424, 95.06025, 92.04930	Positive
	Sulfathiazole	6.14	C9H9N3O2S2	$[M + H]^+$	256.02089	156.01134, 108.04434, 101.01678, 92.0490, 68.04955	Positive
	Sulfisoxazole	7.25	C11H13N3O3S	$[M + H]^+$	268.07504	268.07480, 156.01131, 113.07119, 108.04472, 92.04997	Positive Positive
Quinolones	Ciprofloxacin	5.78	C17H18FN3O3	$[M + H]^+$	332.14050	314.12883, 288.15028	Positive
	Enrofloxacin	5.90	C19H22FN3O3	$[M + H]^+$	360.17180	316.18162, 245.10821, 72.07807	Positive
	Flumequine	8.18	C14H12FNO3	$[M + H]^+$	262.08740	238.05081, 244.07740,	Positive

						202.03040, 174.03530	
	Oxolinic acid	7.35	C13H11NO5	$[M + H]^+$	262.07100	244.06023, 216.02899	Positive
	Sarafloxacin	6.06	C20H17F2N3O3	$[M + H]^+$	386.13107	342.14109, 299.09893	Positive
Tetracyclines	Chlortetracycline	6.26	C22H23ClN2O8	$[M + H]^+$	479.12157	462.09364,444.08320,154.04946, 98.06025	Positive
	Doxycycline	6.31	C22H24N2O8	$[M + H]^+$	445.16054	428.13400,410.12333,339.08620, 321.07561, 154.04983	Positive
	Oxytetracycline	5.85	C22H24N2O9	$[M + H]^+$	461.15546	337.07019, 226.07076, 154.04972	Positive
	Tetracycline	5.96	C22H24N2O8	$[M + H]^+$	445.16054	428.13361, 410.12291,154.04970	Positive
Penicillins	Ampicillin	6.58	C16H19N3O4S	$[M + H]^+$	350.11690	192.04748, 160.04248, 106.06497	Positive
	Penicillin V	7.80	C16H18N2O5S	$[M + H]^+$	351.10092	192.06530, 160.04253, 114.03710, 98.02354, 95.04901	Positive
Macrolides	Erythromycin	6.52	C37H67NO13	$[M + H]^+$	734.46852	576.37390, 158.11764, 127.07539, 116.07063, 80.04910	Positive
	Tylosin	6.58	C46H77NO17	$[M + H]^+$	916.52643	174.11230, 145.08576, 132.10176, 101.05957, 83.04898	Positive
Nitroimidazoles	Dimetridazole	6.34	C5H7N3O2	$[M + H]^+$	142.06110	112.06299, 95.06025, 81.04463, 56.04974	Positive
	Dimetridazole-OH	5.93	C5H7N3O3	$[M + H]^+$	158.05602	158.05602	Positive
	Ipronidazole	7.66	C7H11N3O2	$[M + H]^+$	170.09240	140.09435, 124.09949, 109.07600, 84.08073	Positive
	Ipronidazole-OH	6.76	C7H11N3O3	$[M + H]^+$	186.08732,	168.07673,138.07877,128.04540, 121.07596, 82.06506	Positive
	Metronidazole	5.83	C6H9N3O3	$[M + H]^+$	172.07167	128.04535, 111.04262, 98.04739	Positive
	Ronidazole	6.12	C6H8N4O4	$[M + H]^+$	201.06183	140.04541, 110.04742,	Positive
	Tinidazole	6.56	C8H13N3O4S	$[M + H]^+$	248.06995	128.04522, 121.03163	Positive
Cephalosporins	Ceftiofur	6.85	C19H17N5O7S3	$[M + H]^+$	524.03629	324.05800,241.03873,210.02044, 167.02726, 126.01196	Positive
Diaminopyrimidines	Trimethoprim	5.79	C14H18N4O3	$[M + H]^+$	291.14517	275.11374, 261.09821, 245.10333,230.11626, 123.06651	Positive
Amphenicol	Florfenicol	3.01	C12H14Cl2FNO4S	$[M - H]^-$	355.99319	185.02803,183.01236,151.96680, 120.05260, 119.04920, 78.98470	Negative
	Chloramphenicol	3.32	C11H12Cl2N2O5	$[M - H]^-$	321.00505	257.03405,194.04440,176.03558, 152.03360, 141.01610	Negative

Table S2: Ruggedness evaluation of compound recovery: influence of shaking time, sonication temperature, and ammonium formate pH on Mean, SD, and RSD.

Parameters (Factors)	Factors change	Mean (%)	SD (%)	RSD (%)
Shaking time	2 min	91	8	9
	3 min			
	4 min			
Sonication temperature	45 °C	94	7	8
	50 °C			
	55 °C			
PH of ammonium formate	2.76	92	9	9
	2.78			
	2.80			

Table S3: Multiresidue methods to determine veterinary drug residues in honey LC-MS/MS.

Analytes number	Extraction method and clean up	LC column	Mobile phase	CCα (µg/kg)	CCβ (µg/kg)	Recovery (%)	Reference
27	2 N HCL, water, n-hexane/Strata-X-C SPE cartridge	Poroshell 120 EC-C18 column (100 × 3.0 mm, 2.7 µm)	0.1% FA in Water/ACN	0.14-1.7	0.19-2.5	49-117	Galarini et al., 2015 [46]
40	0.1 M Na2EDTA, nylon filter/ TFC SPE cartridge	Hypersil GOLD aQ C18 column (100 × 2.1 mm,1.7 µm).	Water/MeOH both 4 mM ammonium formate with 0.1% FA	(LOQs) 5-50 50 µg/kg, (LOIs) 0.1 to 50 µg/kg	-	68-121	Aguilera-Luiz et al., 2013 [47]
37	0.1 M citric acid hydrate,0.2 M disodium hydrogen phosphate dihydrate (60:40, v/v),0.1 M EDTA Dihydrate, pH 4.0 / Oasis HLB SPE cartridge	Aqua (150 × 2 mm, 3 µm) with guard from Phenomenex	Water/ACN (both 0.2% (v/v) FA).	7.5–12.9	9.4–19.9	92-106	Bohm et al., 2012 [48]
113	ACN, Na2EDTA, (NH4)2SO4/Evolute™ ABN SPE cartridge	Kinetex Core-Shell C18 (150 × 2.1 mm, 2.6 µm)	Water/ACN (both 0.3% (v/v) FA)	1.0– 1181.2	1.1–2337.0	50-120	Kaufmann et al., 2011 [49]
3	1% trifluoroacetic acid, 0.1 M Na2EDTA/ Oasis HLB SPE cartridge	Kinetex EVO C18 (2.1 × 150 mm,2.6 µm)	Water/ACN (both 0.1% (v/v) FA)	LOD 0.4-2	LOQ 1-5	80–109	Zheng et al., 2017 [50]
8	30 mM NaH2PO4 (pH 7.0), 5% FA in ACN/QuEChERS extraction kit/filtered and analyzed	Zorbax Eclipse Plus C18 column (2.1 × 50 mm, 1.8 µm)	0.02% FA in Water/ACN	LOD 0.2-1.7	LOQ 0.8-5.5	Low spiking level 61.3-99.8 Medium spiking level 77.1-92.3 High spiking level 61.2-93.9	Agui et al., 2012 [25]
42	Na2EDTA, citric acid, water, ACN 1% acetic	Poroshell 120, EC-C18, (2.1 ×	2 mM ammonium formate + 0.1%	-	LOQ 0.46-9.70	81-108	Jin et al., 2017 [45]

	acid, Na2SO4, NaCl/ PSA,C18-EC, filtered nylon membrane	100 mm,2.7 μm) XDB-C18	FA in water/MeOH				
36	1% acetic acid in ACN/H2O (v/v, 80:20),Water, Na2SO4, NaCl/ dSPE salts	Acquity UHPLC HSS T3 column (2.1 × 150 mm,1.8 μm)	0.1% FA in Water/MeOH	0.13-3.67	0.1-2.5	94.2-104.1	Varenina et al, 2023 [51]
90	0.1Mcitric acid and 0.2MNa2HPO4 (8:5,v/v,pH 4), 5% acetic acid in ACN, Na2SO4, NaCl/ Eppendorf tube containing NH2 sorbents	ACQUITY® UPLC BEH C18 column (2.1 × 100 mm, 1.7 μm)	0.1% FA in Water/ACN	LOD 0.24-2.74	LOQ 1.13-8.63	70.21-120.1	Zhang et al.,2016 [52]
41	1 M sodium citrate, 0.5 M sodium Na2EDTA, ACN/Evaporate, filtered and analyzed	ZORBAX Eclipse Plus C18 column (150 mm × 4.6 mm inner diameter; 5 μm particle size	0.1% FA in both Water/ACN	0.35-23 LOD 0.006-3.92	0.39–27 LOQ 0.011-6.54	70-105	This study

Table S4: Outcomes of the Food Analysis Performance Assessment Scheme (FAPAS), proficiency testing (PT)utilizing the validated method for honey analysis.

FAPAS round	Analyte	Assigned value (μg/kg)	Found (μg/kg)	Z-score	Observations
02463	Chloramphenicol	0.3	0.33	0.1	Satisfactory
	Florfenicol	30	25.9	-0.2	Satisfactory
02491	Dimetridazole	1.74	1.12	-0.6	Satisfactory
	Dimetridazole-OH	1.76	1.76	0	Satisfactory
	Ipronidazole	Not detected	-	-	Satisfactory
	Ipronidazole-OH	Not detected	-	-	Satisfactory
	Metronidazole	Not detected	-	-	Satisfactory
	Ronidazole	Not detected	-	-	Satisfactory
02499	Sulfacetamide	Not detected	-	-	Satisfactory
	Sulfachloropyridazine	Not detected	-	-	Satisfactory
	Sulfadiazine	Not detected	-	-	Satisfactory
	Sulfadimethoxine	Not detected	-	-	Satisfactory
	Sulfadoxine	Not detected	-	-	Satisfactory
	Sulfaguanidine	Not detected	-	-	Satisfactory
	Sulfamerazine	Not detected	-	-	Satisfactory
	Sulfamethazine	12.10	11.72	-0.5	
	Sulfamethizol	Not detected	-	-	Satisfactory
	Sulfamethoxazole	Not detected	-	-	Satisfactory
	Sulfamethoxypyridazine	25.14	22.63	-0.4	
	Sulfamonomethoxine	Not detected	-	-	Satisfactory
	Sulfamoxol	Not detected	-	-	Satisfactory
	Sulfanilamide	Not detected	-	-	Satisfactory
	Sulfapyridine	Not detected	-	-	Satisfactory
	Sulfathiazole	20.15	18.78	-0.5	
	Sulfisoxazole	Not detected	-	-	Satisfactory

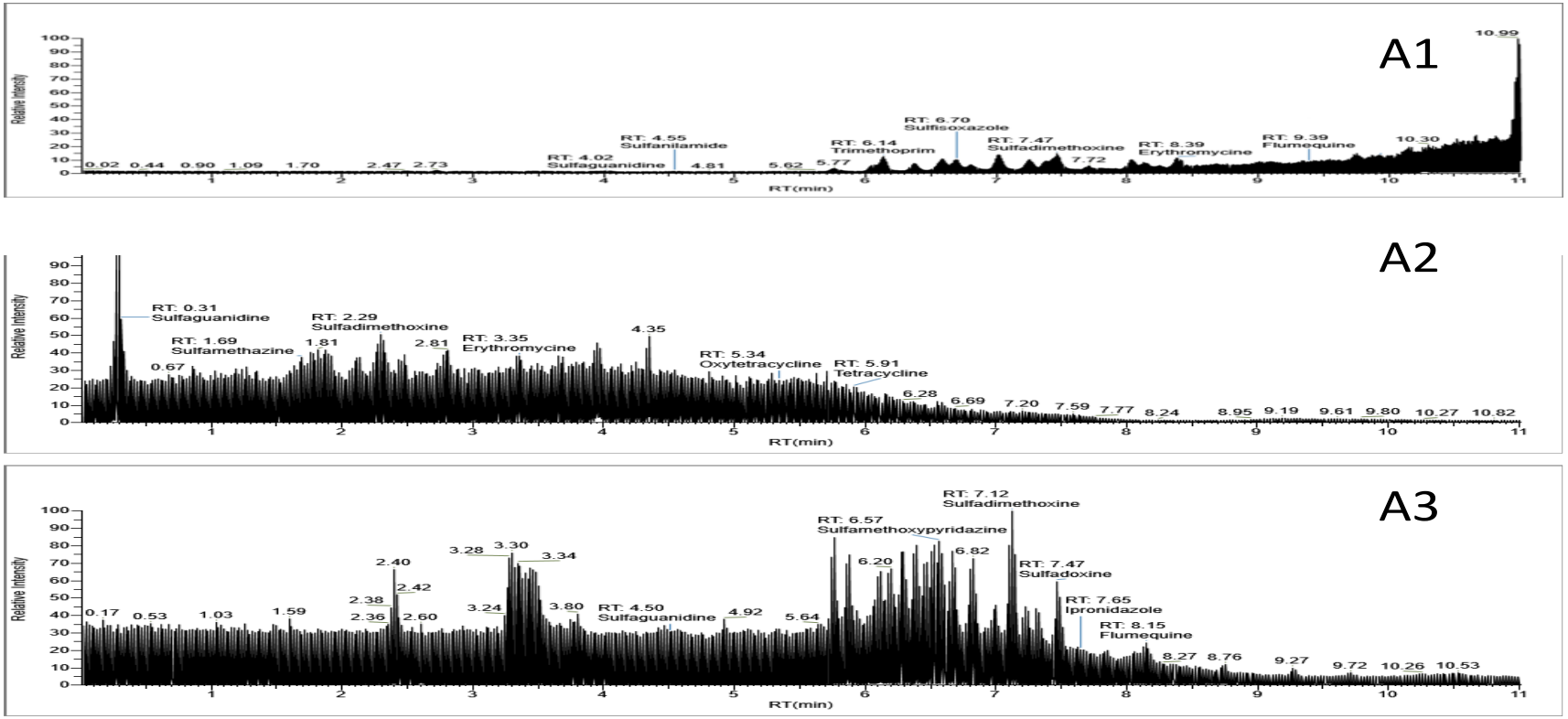

Fig. S1: Comparison between the three tested columns: (A1) Hypersil GOLD aQ, (A2) Accucore VDX, and (A3) ZORBAX Eclipse Plus C18.

Fig. S1 Alt Text: A graph with multiple lines and columns representing measurements.

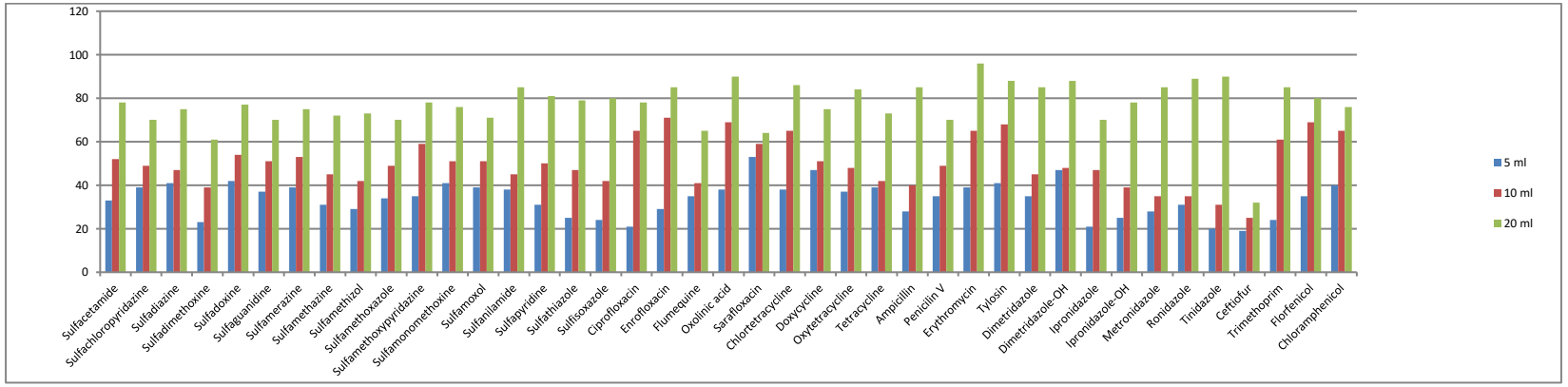

Fig. S2: Effect of different volumes of acetonitrile (5, 10, and 20 mL) on the recovery rates of the 41 veterinary drugs.

Fig. S2 Alt Text: A graph with multiple columns comparing the recovery rates of veterinary drugs at different volumes of acetonitrile.

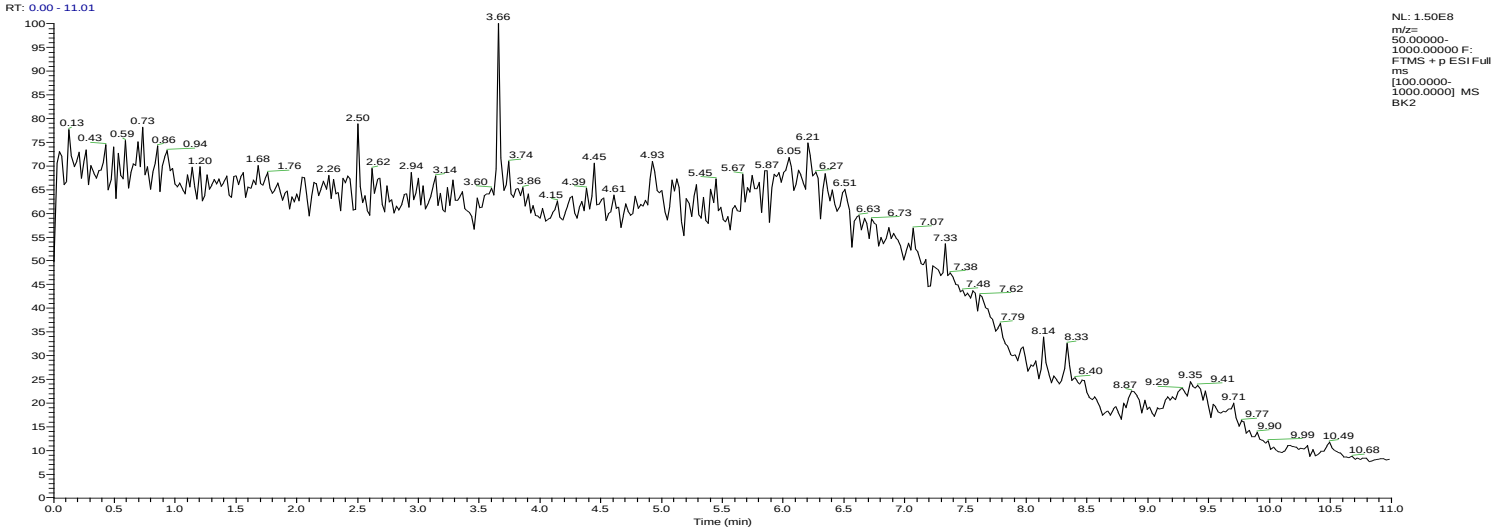

Fig. S3: Blank samples show no matrix interferences.

Fig. S3 Alt Text: A graph displaying a steeply sloping line labeled "Blank samples show matrix interference."