

Supplementary Information

Evaluation of the Chemical Composition of Dry Feeds for Dogs and Cats

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Table S1. Results of the concentration of Al, Ba, Ca, Cr, Cu, Fe, K, Mg, Mn, Ni, P, S, Sr, V and Zn in dog feed samples by ICP OES

Manufacturer	Flavor	Humidity / %	Al/ (mg kg ⁻¹)	Ba/ (mg kg ⁻¹)	Ca/ (g kg ⁻¹)	Cr/ (mg kg ⁻¹)	Cu/ (mg kg ⁻¹)	Fe/ (mg kg ⁻¹)	K/ (g kg ⁻¹)	Mg/ (g kg ⁻¹)	Mn/ (mg kg ⁻¹)	Ni/ (mg kg ⁻¹)	P/ (g kg ⁻¹)	S/ (g kg ⁻¹)	Sr/ (mg kg ⁻¹)	V/ (mg kg ⁻¹)	Zn/ (mg kg ⁻¹)
F1	corn, chicken and bones	8.9 ± 0.2	40.2 ± 10	9.8 ± 0.6	1.6 ± 0.1	0.51 ± 0.1	10.6 ± 0.4	210 ± 7	0.89 ± 0.03	0.13 ± 0.003	52.0 ± 2	0.88 ± 0.1	1.2 ± 0.05	0.28 ± 0.01	40.4 ± 2	0.30 ± 0.1	185 ± 6
F2	meat and plant	8.0 ± 0.5	0.20 ± 0.03 ^a	12.2 ± 0.2	2.0 ± 0.1	0.60 ± 0.05	14.7 ± 0.5	235 ± 5	0.92 ± 0.02	0.11 ± 0.004	6.8 ± 0.3	< 0.56	1.5 ± 0.1	0.32 ± 0.01	31.4 ± 2	0.44 ± 0.1	327 ± 5
F3	meat	7.9 ± 0.4	41.5 ± 6	15.3 ± 0.9	3.2 ± 0.1	0.50 ± 0.1	9.2 ± 0.2	228 ± 6	0.94 ± 0.03	0.23 ± 0.01	69.6 ± 2	0.61 ± 0.5	2.2 ± 0.1	0.23 ± 0.01	46.3 ± 2	0.25 ± 0.1	238 ± 7
F1	meat and cereals	7.7 ± 0.4	88.7 ± 3	11.8 ± 0.6	1.9 ± 0.1	0.59 ± 0.2	18.6 ± 0.6	249 ± 12	0.95 ± 0.03	0.16 ± 0.004	29.8 ± 2	< 0.56	1.3 ± 0.05	0.23 ± 0.01	45.9 ± 2	0.46 ± 0.1	188 ± 7
F3	meat	8.6 ± 0.4	214 ± 13	12.1 ± 0.2	1.9 ± 0.04	< 0.084	10.4 ± 0.3	310 ± 13	1.0 ± 0.01	0.19 ± 0.001	66.3 ± 0.8	0.72 ± 0.4	1.6 ± 0.02	0.28 ± 0.01	29.6 ± 0.6	0.51 ± 0.1	291 ± 5
F2	cereals	7.4 ± 1.0	0.14 ± 0.02 ^a	8.7 ± 0.1	1.6 ± 0.1	< 0.084	26.2 ± 0.9	242 ± 7	0.91 ± 0.02	0.12 ± 0.003	16.3 ± 0.1	< 0.56	1.4 ± 0.04	0.41 ± 0.01	34.5 ± 0.4	0.46 ± 0.1	373 ± 5
F6	meat	7.6 ± 0.2	240 ± 29	11.0 ± 1	2.4 ± 0.1	1.2 ± 0.6	3.8 ± 0.1	366 ± 11	0.80 ± 0.03	0.42 ± 0.01	18.6 ± 2	0.81 ± 0.1	1.5 ± 0.1	0.21 ± 0.01	31.6 ± 2	0.60 ± 0.1	60.7 ± 2
F4	meat	8.6 ± 0.03	110 ± 15	15.0 ± 0.7	3.4 ± 0.1	0.90 ± 0.1	7.7 ± 0.2	323 ± 10	0.61 ± 0.02	0.14 ± 0.004	45.6 ± 0.5	0.65 ± 0.1	2.3 ± 0.1	0.24 ± 0.01	46.1 ± 2	0.87 ± 0.1	80.1 ± 5
F4	meat	10.0 ± 0.3	122 ± 9	17.9 ± 0.6	2.8 ± 0.1	0.63 ± 0.01	6.0 ± 0.2	218 ± 6	0.54 ± 0.01	0.16 ± 0.01	30.0 ± 0.9	< 0.56	1.7 ± 0.05	0.18 ± 0.01	63.0 ± 3	0.56 ± 0.1	52.7 ± 1
F4	mixture (mix)	10.0 ± 0.4	63.2 ± 9	18.3 ± 0.2	1.7 ± 0.04	0.25 ± 0.05	4.1 ± 0.03	129 ± 10	0.63 ± 0.01	0.16 ± 0.004	31.3 ± 0.5	< 0.56	1.2 ± 0.02	0.13 ± 0.003	29.5 ± 0.7	0.28 ± 0.1	40.8 ± 0.2
F7	meat	6.9 ± 0.2	125 ± 28	15.5 ± 0.5	2.4 ± 0.1	0.39 ± 0.04	12.3 ± 0.2	195 ± 7	0.94 ± 0.005	0.22 ± 0.002	38.1 ± 0.3	< 0.56	1.2 ± 0.04	0.21 ± 0.003	101 ± 5	< 0.21	141 ± 9
F5	mixture (mix)	6.6 ± 0.04	68.1 ± 3	18.0 ± 0.2	2.7 ± 0.2	< 0.084	11.4 ± 0.4	156 ± 6	0.81 ± 0.03	0.21 ± 0.01	29.2 ± 10	< 0.56	1.6 ± 0.1	0.17 ± 0.01	49.4 ± 4	< 0.21	128.8 ± 7
F5	meat and plant	6.1 ± 0.1	70.0 ± 10	15.1 ± 0.7	1.8 ± 0.1	0.15 ± 0.1	17.7 ± 0.3	239 ± 8	0.89 ± 0.005	0.20 ± 0.002	32.8 ± 3	0.60 ± 0.2	1.4 ± 0.04	0.27 ± 0.003	34.8 ± 1	0.32 ± 0.1	190.7 ± 3
F2	milk, chicken and bones	10.0 ± 0.7	0.14 ± 0.1 ^a	12.8 ± 0.9	1.3 ± 0.1	0.22 ± 0.1	26.6 ± 0.5	191 ± 6	0.79 ± 0.02	0.11 ± 0.003	13.7 ± 0.4	< 0.56	1.0 ± 0.1	0.31 ± 0.01	39.1 ± 2	0.40 ± 0.03	344 ± 11
F3	meat, plan and herbs	7.0 ± 0.6	43.4 ± 5	4.7 ± 0.1	1.0 ± 0.04	< 0.084	17.9 ± 0.6	251 ± 17	0.90 ± 0.03	0.11 ± 0.004	79.0 ± 3	< 0.56	1.1 ± 0.03	0.37 ± 0.01	27.9 ± 1	0.32 ± 0.1	321 ± 7
F2	meat and plant	8.2 ± 0.1	0.25 ± 0.01 ^a	15.0 ± 0.8	1.5 ± 0.02	< 0.084	18.9 ± 0.7	222 ± 5	0.95 ± 0.03	0.14 ± 0.01	9.6 ± 0.2	< 0.56	1.1 ± 0.03	0.28 ± 0.01	30.8 ± 1	0.32 ± 0.1	106 ± 6
F2	meat and plant	8.0 ± 0.4	0.20 ± 0.02 ^a	16.1 ± 0.6	2.0 ± 0.2	0.40 ± 0.1	18.3 ± 1	165 ± 7	0.87 ± 0.03	994 ± 22 ^b	7.5 ± 1	< 0.56	1.2 ± 0.1	0.29 ± 0.01	39.3 ± 3	0.32 ± 0.04	344 ± 7
F2	cereals	9.8 ± 0.3	0.15 ± 0.04 ^a	10.1 ± 0.8	1.3 ± 0.2	0.29 ± 0.1	33.1 ± 0.9	166 ± 10	0.68 ± 0.01	602 ± 9 ^b	6.7 ± 0.1	< 0.56	0.93 ± 0.1	0.31 ± 0.01	26.3 ± 4	0.33 ± 0.1	240 ± 3
F3	meat	8.6 ± 0.2	87.6 ± 14	14.8 ± 1	1.7 ± 0.1	0.33 ± 0.02	12.5 ± 0.5	192 ± 2	0.76 ± 0.03	0.16 ± 0.01	58.1 ± 2	0.57 ± 0.3	1.1 ± 0.1	0.21 ± 0.01	33.7 ± 2	0.30 ± 0.04	284 ± 11
F3	meat	9.6 ± 0.7	386 ± 3	17.5 ± 1	1.7 ± 0.1	0.77 ± 0.03	12.6 ± 0.2	353 ± 5	1.0 ± 0.05	0.24 ± 0.01	66.5 ± 7	< 0.56	1.3 ± 0.05	0.21 ± 0.004	34.8 ± 2	0.54 ± 0.2	257 ± 5
F8	meat, chicken and bones	7.2 ± 2	424 ± 14	18.4 ± 0.7	2.9 ± 0.15	0.85 ± 0.2	13.5 ± 0.5	336 ± 4	1.1 ± 0.04	0.24 ± 0.01	94.9 ± 6	0.68 ± 0.02	2.4 ± 0.1	0.34 ± 0.02	41.9 ± 2	0.42 ± 0.2	378 ± 4
F9	meat and vicera	8.9 ± 3	105 ± 7	13.4 ± 1	2.2 ± 0.1	0.30 ± 0.01	4.4 ± 0.1	138 ± 7	0.61 ± 0.01	0.12 ± 0.002	4.5 ± 0.2	< 0.56	1.2 ± 0.05	0.19 ± 0.003	40.2 ± 3	0.25 ± 0.04	38.1 ± 0.7
F5	mixture (mix)	6.0 ± 0.1	92.3 ± 4	17.9 ± 1	2.3 ± 0.2	< 0.084	12.0 ± 1	197 ± 8	0.82 ± 0.04	0.26 ± 0.01	22.6 ± 1	< 0.56	1.3 ± 0.1	0.18 ± 0.01	44.4 ± 3	0.30 ± 0.04	119 ± 5
F10	mixture (mix)	9.8 ± 0.3	151 ± 8	6.0 ± 0.2	2.2 ± 0.1	0.86 ± 0.02	17.9 ± 0.3	200 ± 10	0.79 ± 0.02	0.17 ± 0.003	57.7 ± 4	0.65 ± 0.02	0.92 ± 0.03	0.25 ± 0.004	72.1 ± 2	0.26 ± 0.03	82.0 ± 2
Minimum allowed concentration		–	–	–	6.0 ^c	–	7.3 ^c	80.0 ^c	6.0 ^c	0.4 ^c	5.0 ^c	–	5.0 ^c 0.6 ^d	–	–	–	120 ^c
Maximum allowed concentration		–	–	–	25.0 ^c 2.4 ^d	–	250 ^c	3000 ^c	–	3.0 ^c	–	–	16.0 ^c	–	–	–	1000 ^c

^ag kg⁻¹; ^bmg kg⁻¹; ^cvalues established by the AAFCO; ^dvalues established by the MAPA. Results expressed as mean ± standard deviation (n = 3).

Table S2. Results of the concentrations of Al, Ba, Ca, Cr, Cu, Fe, K, Mg, Mn, Ni, P, S, Sr, V and Zn in cat feed samples by ICP OES

Manufacturer	Flavor	Humidity / %	Al / (mg kg ⁻¹)	Ba / (mg kg ⁻¹)	Ca / (g kg ⁻¹)	Cr / (mg kg ⁻¹)	Cu / (mg kg ⁻¹)	Fe / (mg kg ⁻¹)	K / (g kg ⁻¹)	Mg / (g kg ⁻¹)	Mn / (mg kg ⁻¹)	Ni / (mg kg ⁻¹)	P / (g kg ⁻¹)	S / (g kg ⁻¹)	Sr / (mg kg ⁻¹)	V / (mg kg ⁻¹)	Zn / (mg kg ⁻¹)
F11	mixture (mix)	9.1 ± 0.2	487 ± 2	11.7 ± 0.4	1.9 ± 0.03	1.1 ± 0.1	15.6 ± 2	351 ± 9	0.90 ± 0.03	0.15 ± 0.01	31.9 ± 2	0.92 ± 0.1	1.6 ± 0.03	0.35 ± 0.02	32.1 ± 0.5	0.42 ± 0.1	118 ± 4
F2	meat and fish	12 ± 3	155 ± 14	8.1 ± 0.1	1.4 ± 0.1	1.0 ± 0.1	16.6 ± 0.7	233 ± 11	1.0 ± 0.03	0.11 ± 0.004	15.2 ± 0.3	0.56 ± 0.1	1.3 ± 0.1	0.36 ± 0.02	59.5 ± 2	0.85 ± 0.05	267 ± 8
F12	meat, fish and plant	7.9 ± 0.4	145 ± 13	5.8 ± 0.2	1.4 ± 0.1	0.71 ± 0.03	17.8 ± 0.6	328 ± 10	0.51 ± 0.02	0.17 ± 0.01	42.3 ± 7	0.61 ± 0.02	1.2 ± 0.04	0.41 ± 0.01	21.0 ± 1	0.47 ± 0.04	173 ± 4
F1	meat	8.3 ± 1	66.1 ± 14	10.5 ± 1	1.7 ± 0.2	1.0 ± 0.2	18.8 ± 0.7	259 ± 12	1.0 ± 0.02	0.14 ± 0.1	22.7 ± 1	0.66 ± 0.1	1.5 ± 0.1	0.30 ± 0.01	38.1 ± 3	0.37 ± 0.1	168 ± 5
F3	meat, fish and plant	7.2 ± 0.3	260 ± 9	15.9 ± 0.3	2.8 ± 0.1	1.1 ± 0.1	20.5 ± 1	407 ± 11	0.61 ± 0.01	0.19 ± 0.001	64.4 ± 4	0.65 ± 0.3	1.8 ± 0.04	0.40 ± 0.01	44.6 ± 1	0.52 ± 0.03	267 ± 1
F13	fish	7.7 ± 0.4	75.4 ± 15	2.3 ± 0.1	0.70 ± 0.03	< 0.084	12.6 ± 0.3	126 ± 13	1.2 ± 0.1	830 ± 15 ^a	8.0 ± 0.2	< 0.56	1.0 ± 0.01	0.46 ± 0.01	10.9 ± 0.7	< 0.21	203 ± 3
F14	mixture (mix)	15 ± 3	63.9 ± 14	11.5 ± 0.3	0.34 ± 0.02	< 0.084	8.1 ± 0.1	177 ± 9	1.1 ± 0.01	0.28 ± 0.01	81.2 ± 2	< 0.56	1.2 ± 0.03	0.180 ± 0.004	12.2 ± 0.6	< 0.21	62.7 ± 2
F9	mixture (mix)	8.1 ± 0.8	137.8 ± 15	13.6 ± 0.4	2.0 ± 0.1	< 0.084	3.7 ± 0.1	215 ± 0.6	0.91 ± 0.02	0.15 ± 0.004	10.6 ± 0.6	< 0.56	1.5 ± 0.1	0.33 ± 0.02	45.5 ± 1.3	0.59 ± 0.1	51.5 ± 3
F3	mixture (mix)	9.4 ± 0.7	96.2 ± 16	12.4 ± 0.4	2.7 ± 0.1	1.0 ± 0.1	11.4 ± 0.2	251 ± 6	1.0 ± 0.002	0.17 ± 0.002	28.8 ± 10	0.92 ± 0.1	1.9 ± 0.1	0.41 ± 0.01	38.5 ± 0.7	0.4 ± 0.1	154 ± 3
F1	meat	8.7 ± 0.7	41.6 ± 3	4.9 ± 0.3	1.3 ± 0.1	0.76 ± 0.04	18.9 ± 0.2	259 ± 4	1.0 ± 0.02	0.13 ± 0.001	26.5 ± 2	0.61 ± 0.1	1.7 ± 0.04	0.49 ± 0.1	30.6 ± 1	0.38 ± 0.2	179 ± 3
F15	mixture (mix)	13 ± 4	883 ± 7	19.7 ± 1	2.3 ± 0.1	1.8 ± 0.1	10.9 ± 0.1	637 ± 11	0.83 ± 0.02	0.34 ± 0.01	52.9 ± 1	1.1 ± 0.1	1.3 ± 0.04	0.31 ± 0.01	40.0 ± 1	1.2 ± 0.2	84.9 ± 1
F6	mixture (mix)	8.8 ± 2	126 ± 13	10.6 ± 0.8	1.5 ± 0.1	0.11 ± 0.02	21.3 ± 0.8	259 ± 7	0.64 ± 0.02	0.18 ± 0.01	40.7 ± 2	< 0.56	1.0 ± 0.05	0.31 ± 0.01	33.2 ± 1	0.26 ± 0.1	174 ± 6
F11	mixture (mix)	7.3 ± 0.4	433 ± 8	14.3 ± 0.6	1.8 ± 0.1	0.67 ± 0.1	16.5 ± 0.6	252 ± 7	0.82 ± 0.02	0.17 ± 0.01	32.1 ± 2	0.78 ± 0.03	1.3 ± 0.04	0.29 ± 0.01	43.6 ± 1	< 0.21	108 ± 4
F16	fish	8.5 ± 0.03	47.6 ± 9	18.5 ± 0.7	2.1 ± 0.2	< 0.084	14.4 ± 1	121 ± 8	1.0 ± 0.03	0.23 ± 0.01	51.3 ± 6	0.60 ± 0.1	1.5 ± 0.1	0.21 ± 0.005	40.0 ± 3	< 0.21	73.5 ± 2
F3	fish	7.1 ± 0.1	26.5 ± 7	4.1 ± 0.1	1.0 ± 0.1	< 0.084	21.7 ± 0.6	279 ± 6	0.78 ± 0.02	794 ± 12	93.9 ± 5	< 0.56	1.1 ± 0.04	0.40 ± 0.01	33.5 ± 2	0.35 ± 0.01	404 ± 11
F9	mixture (mix)	8.1 ± 0.9	88.5 ± 10	9.3 ± 0.2	1.3 ± 0.1	0.39 ± 0.01	5.3 ± 0.2	144 ± 3	0.74 ± 0.01	0.11 ± 0.002	9.3 ± 0.1	< 0.56	0.90 ± 0.01	0.25 ± 0.01	29.8 ± 1	0.27 ± 0.1	40.7 ± 0.7
F11	mixture (mix)	9.1 ± 0.1	520 ± 10	16.3 ± 1	2.2 ± 0.2	0.92 ± 0.1	20.8 ± 0.7	332 ± 3	1.0 ± 0.02	0.16 ± 0.01	28.3 ± 1	< 0.56	1.5 ± 0.1	0.35 ± 0.02	47.2 ± 5	0.33 ± 0.03	111 ± 3
Minimum allowed concentration		–	–	–	6.0 ^b	–	5.0 ^b	80.0 ^b	6.0 ^b	0.4 ^b	7.5 ^b	–	5.0 ^b 0.6 ^c	–	–	–	75.0 ^b
Maximum allowed concentration		–	–	–	2.4 ^c	–	–	–	–	–	–	–	–	–	–	–	2000 ^b

^amg kg⁻¹; ^bvalues established by the AAFCO; ^cvalues established by the MAPA. Results expressed as mean ± standard deviation (n = 3).

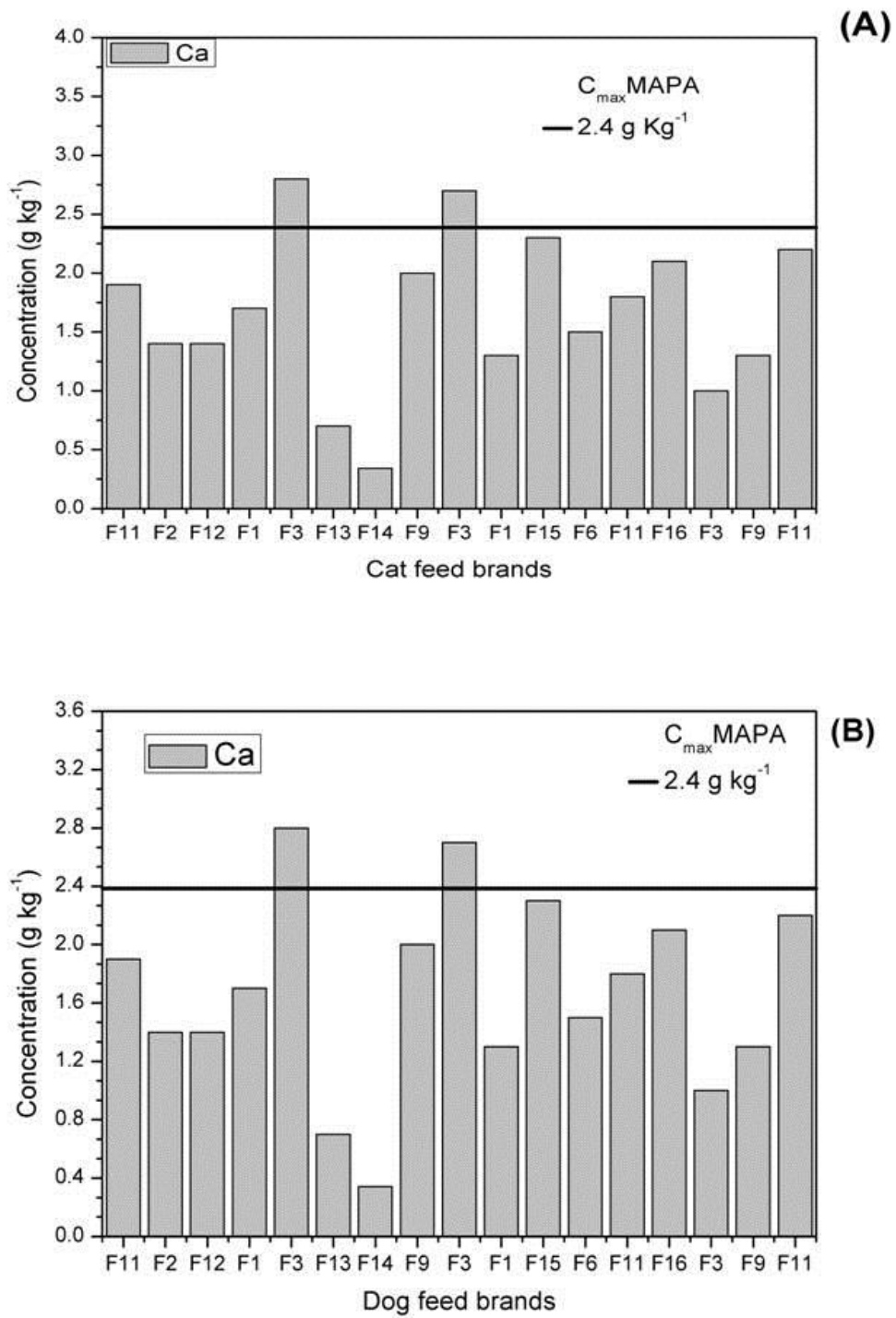


Figure S1. Graphics of Ca quantification in (A) cat and (B) dog feed samples.

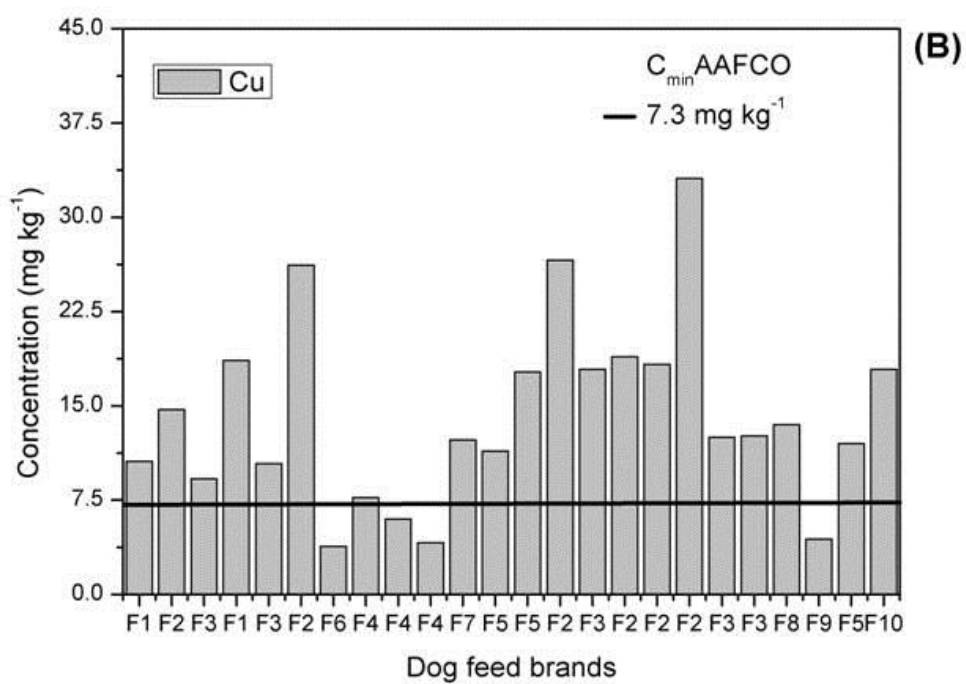
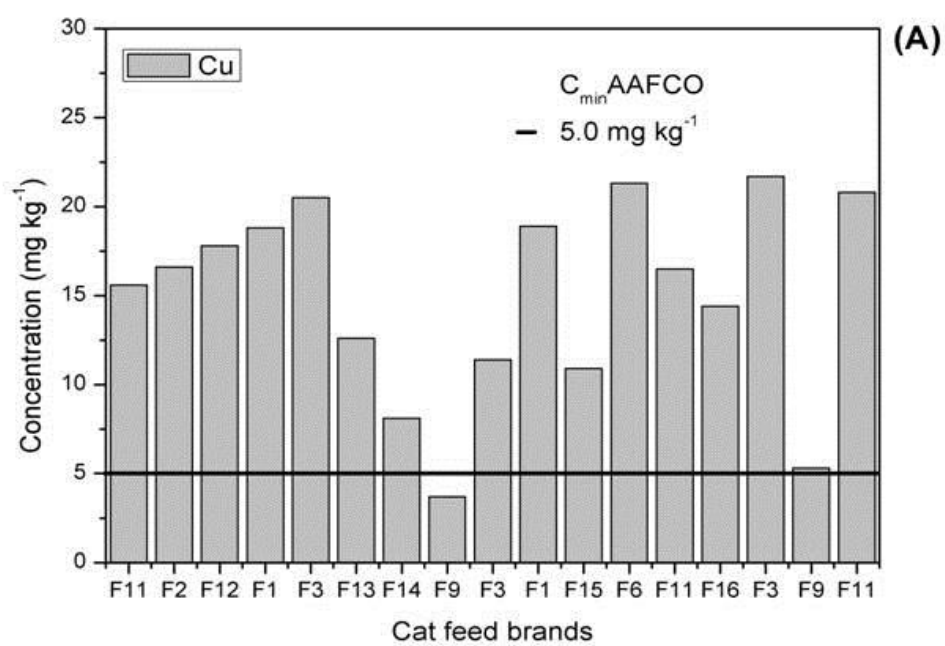


Figure S2. Graphics of Cu quantification in (A) cat and (B) dog feed samples.

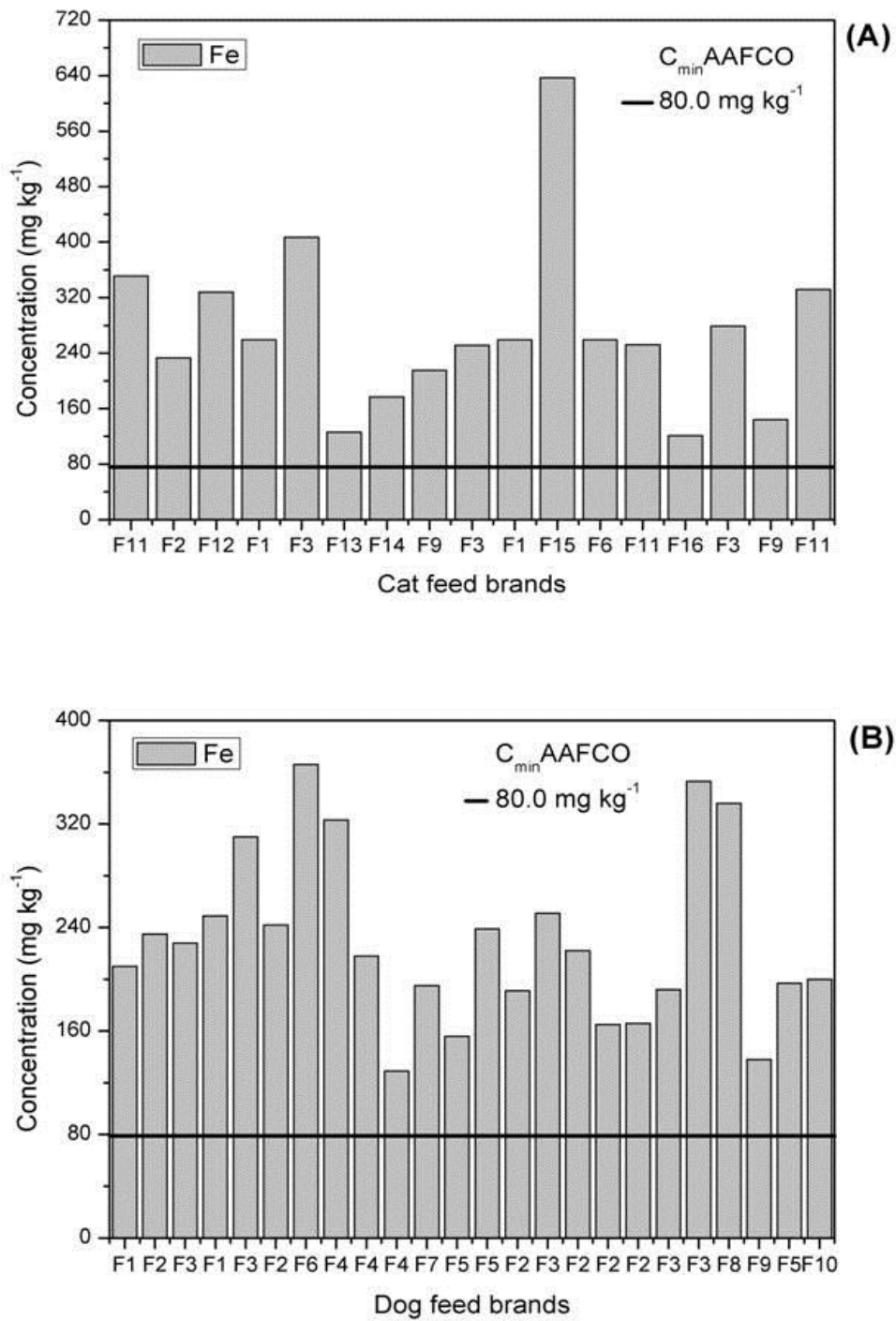


Figure S3. Graphics of Fe quantification in (A) cat and (B) dog feed samples.

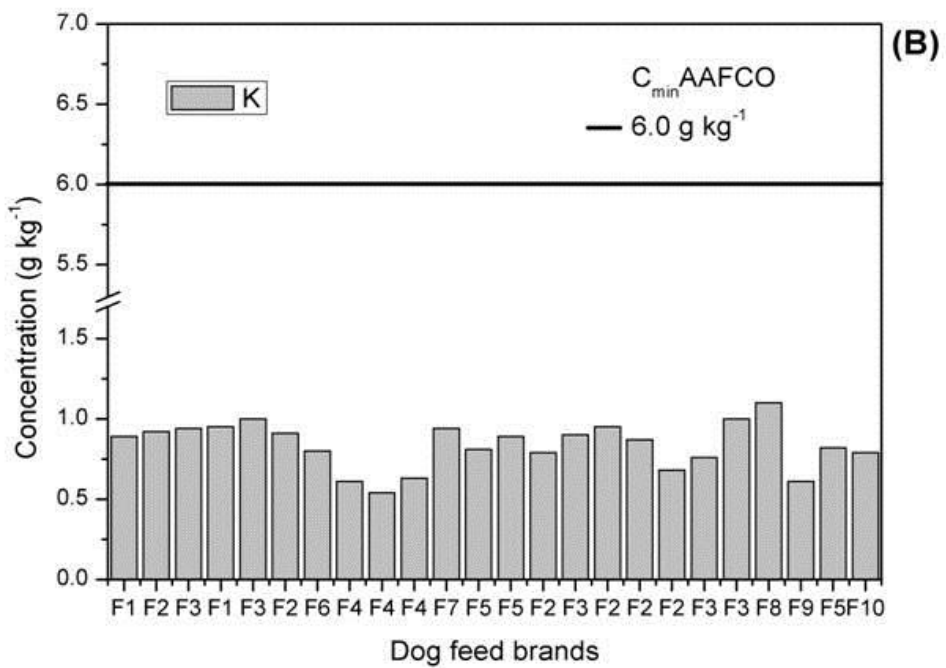
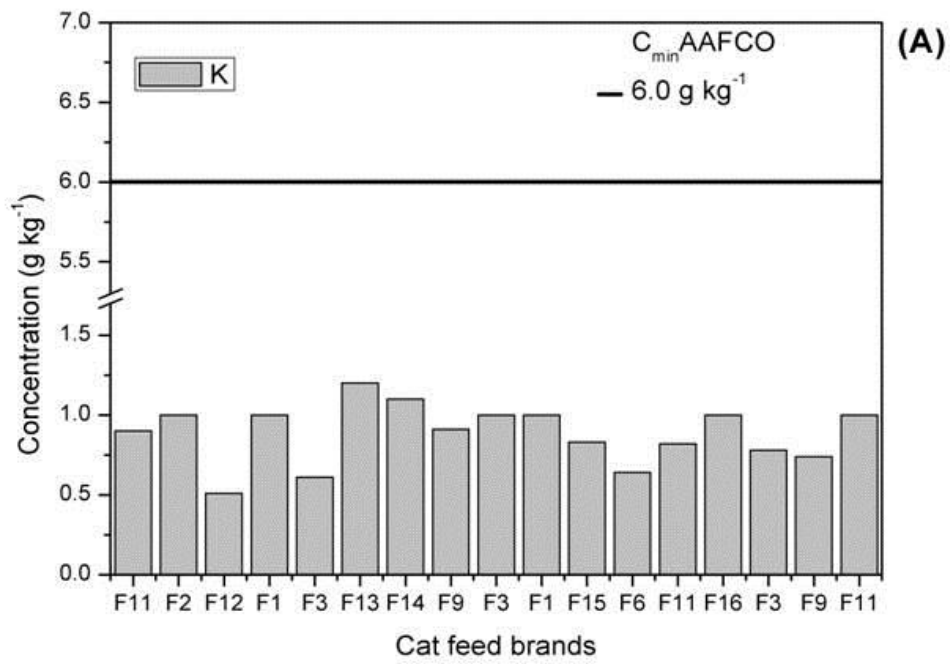


Figure S4. Graphics of K quantification in (A) cat and (B) dog feed samples.

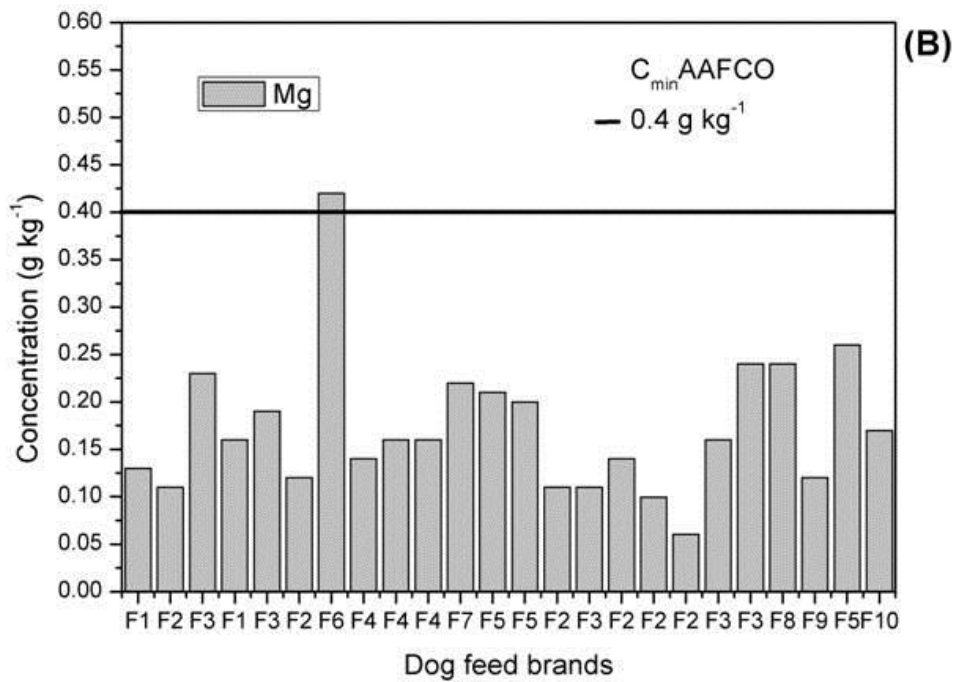
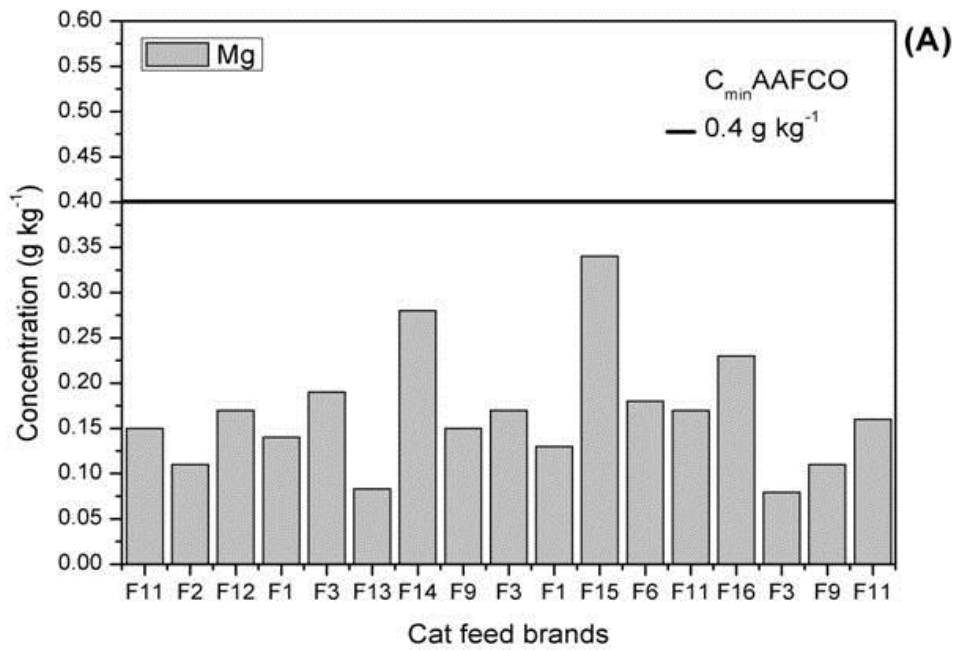


Figure S5. Graphics of Mg quantification in (A) cat and (B) dog feed samples.

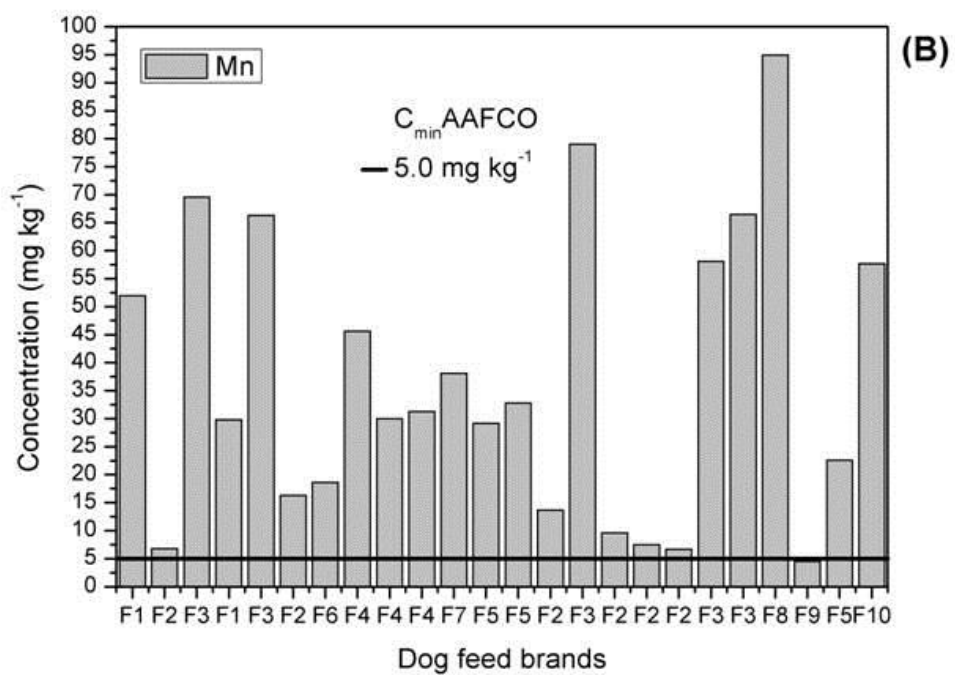
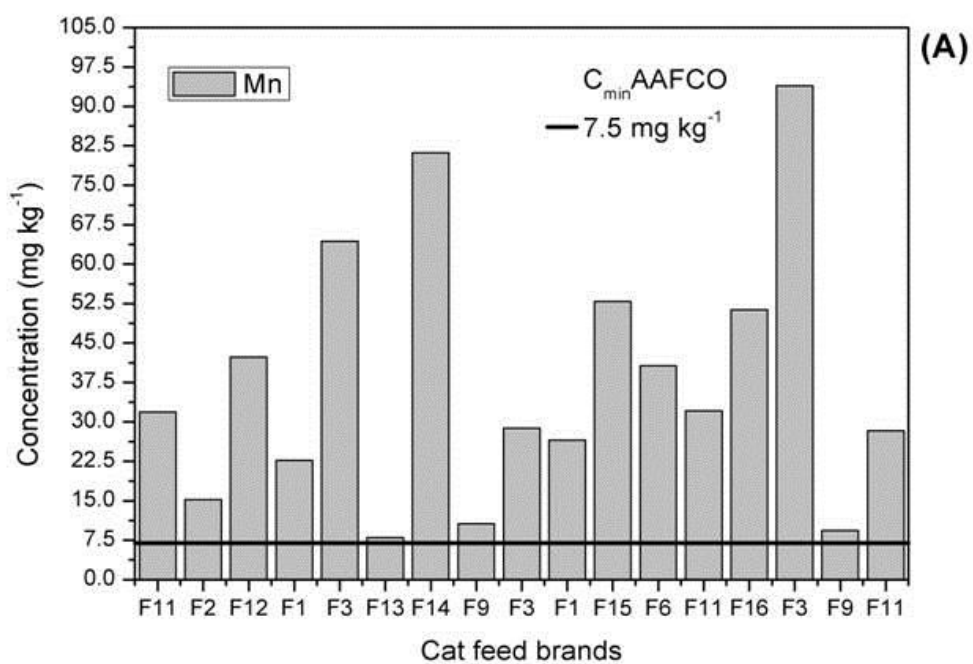


Figure S6. Graphics of Mn quantification in (A) cat and (B) dog feed samples.

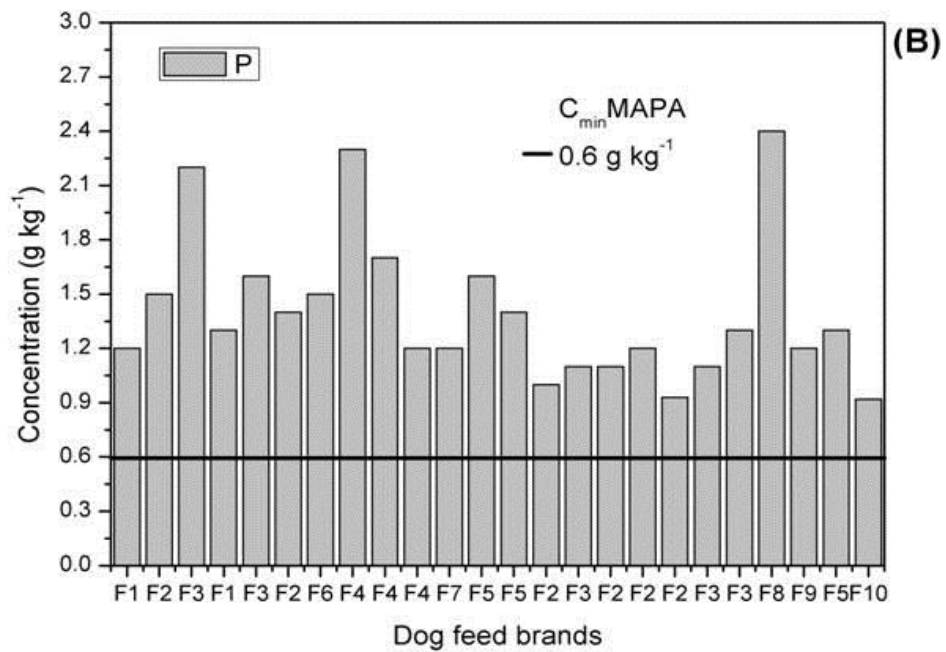
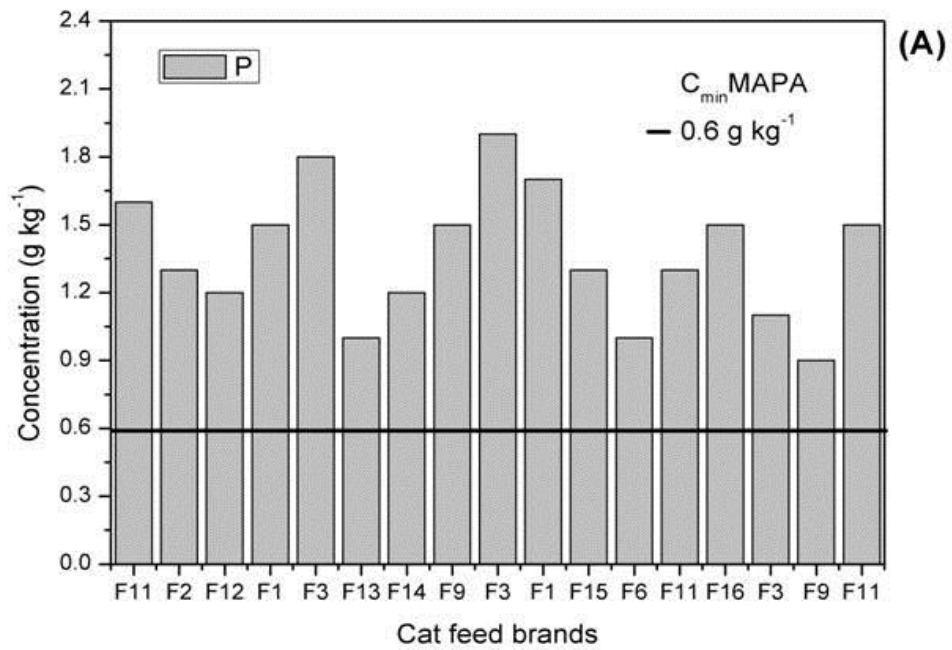


Figure S7. Graphics of P quantification in (A) cat and (B) dog feed samples.

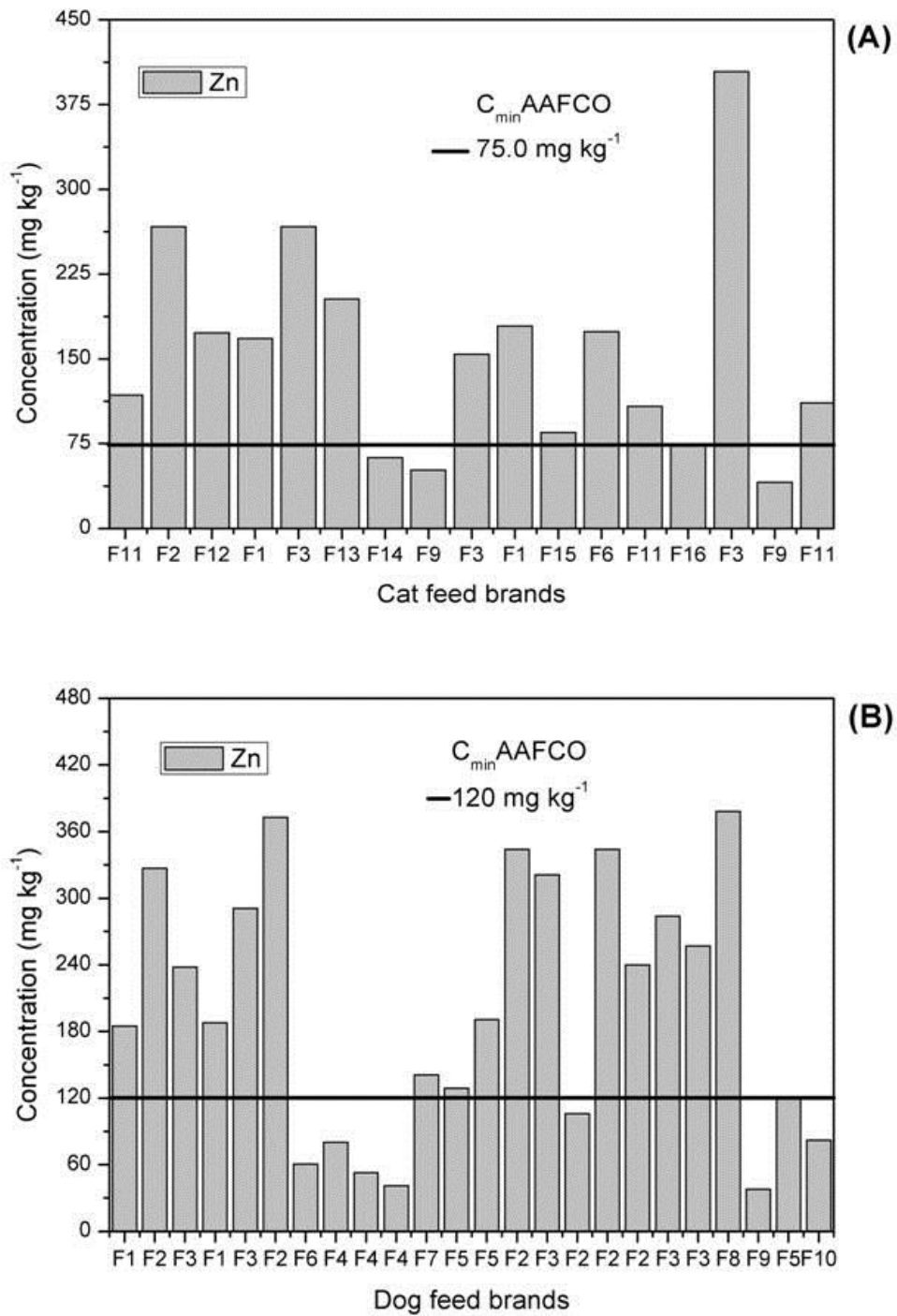


Figure S8. Graphics of Zn quantification in (A) cat and (B) dog feed samples.