

Supplementary Material

Assessment of trace element content throughout white shrimp (*Litopenaeus vannamei*) farming cycle

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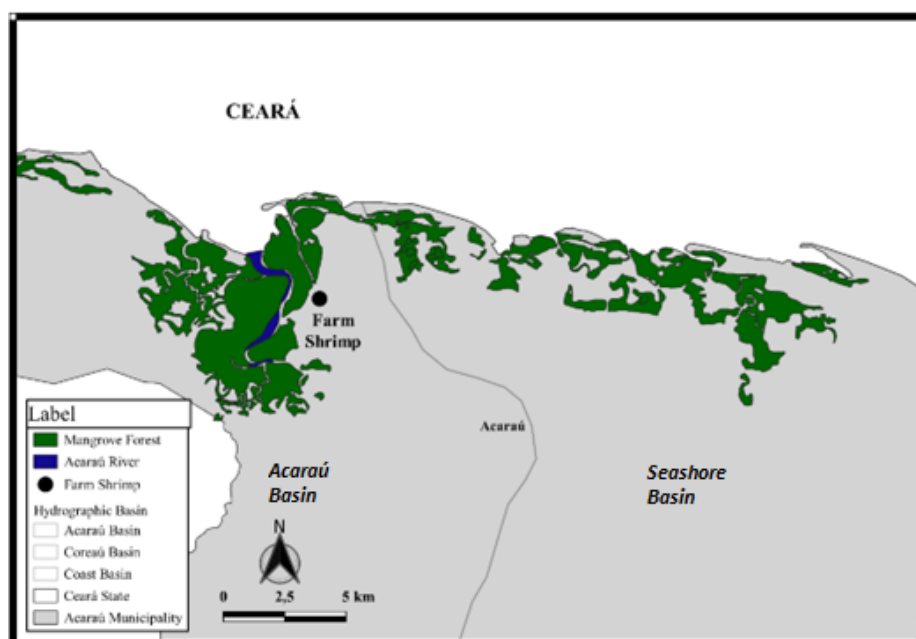
Assessment of trace elements content through white shrimp

(*Litopenaeus vannamei*) farming cycle

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SUPPLEMENTARY MATERIAL

S1: Map of hydrographic basin of Acaraú municipality, Ceara where the shrimp farm used in this study were collected.



S2 – Limit of quantification (LOQ) of Al, As, Co, Cu, Cr, Mn, Mo, Pb, Se, V and Zn quantification in shrimp samples by MIP OES and ICP-MS/MS.

Elements	Concentration value
Al (mg kg ⁻¹) ^a	0.020
As (µg kg ⁻¹) ^b	0.433
Co (µg kg ⁻¹) ^b	0.137
Cu (µg kg ⁻¹) ^b	0.182
Cr (µg kg ⁻¹) ^b	0.467
Mn (µg kg ⁻¹) ^b	0.084
Mo (µg kg ⁻¹) ^b	0.100
Pb (µg kg ⁻¹) ^b	0.156
Se (µg kg ⁻¹) ^b	0.043
V (µg kg ⁻¹) ^b	0.345

Zn (mg kg ⁻¹) ^a	0.533
	^a MIP-OES ^b ICP-MS/MS.

1 **S3: The mass fraction of Al, As, Cd, Co, Cr, Cu, Mn, Mo, Pb, Se, V and**
2 **Zn (mg kg⁻¹) through shrimp farmed cycle. (mean ± sd, n=3). Elements**
3 **concentrations below LOD are noted with < LOD value.**

Ponds																
	Pond 1				Pond 2			Pond 3				Pond 4			Pond 5	
Elements	Mysis	Postlarval (Week 0)	Week 3	Week 4	Postlarval (Week 0)	Week 3	Week 4	Postlarval (Week 0)	Week 3	Week 4	Postlarval (Week 0)	Week 3	Week 4	Postlarval (Week 0)	Week 3	Week 4
Al	8.30 ± 0.50	9.39 ± 1.03 ^a	42.3 ± 2.7 ^b	23.9 ± 1.8 ^c	10.7 ± 1.1 ^a	27.9 ± 2.0 ^b	21.7 ± 1.8 ^b	13.7 ± 1.1 ^a	38.4 ± 2.2 ^b	14.5 ± 0.8 ^a	5.16 ± 0.43 ^a	21.6 ± 0.2 ^b	16.5 ± 0.1 ^b	3.33 ± 0.49	30.9 ± 1.2	23.7 ± 3.3
As	2.12 ± 0.32	3.08 ± 0.11 ^a	3.30 ± 0.2 ^a	2.39 ± 0.11 ^b	3.66 ± 0.01 ^a	3.72 ± 0.22 ^a	2.07 ± 0.12 ^b	3.10 ± 0.05 ^a	3.31 ± 0.24 ^a	3.39 ± 0.09 ^a	3.68 ± 0.10 ^a	3.20 ± 0.17 ^a	3.31 ± 0.36 ^a	3.29 ± 0.04 ^a	2.79 ± 0.05 ^b	2.10 ± 0.12 ^c
Cd*	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Co	<0.17*	0.91 ± 0.08 ^a	0.32 ± 0.04 ^b	0.40 ± 0.03 ^c	0.70 ± 0.01 ^a	0.54 ± 0.04 ^b	0.45 ± 0.02 ^b	0.91 ± 0.05 ^a	0.36 ± 0.03 ^b	0.29 ± 0.01 ^b	0.78 ± 0.02 ^a	0.23 ± 0.01 ^b	0.35 ± 0.03 ^c	1.02 ± 0.04 ^a	0.24 ± 0.01 ^b	0.41 ± 0.01 ^c
Cr	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
Cu	38.5 ± 2.5	76.1 ± 11.7 ^a	48.3 ± 3.1 ^b	91.0 ± 5.0 ^c	63.9 ± 7.6 ^a	65.9 ± 3.2 ^a	144 ± 10 ^b	58.4 ± 4.9 ^a	55.9 ± 1.8 ^a	76.0 ± 2.7 ^b	68.8 ± 3.1 ^a	54.4 ± 1.7 ^b	78.6 ± 3.4 ^a	57.6 ± 4.8 ^a	115 ± 10 ^b	125 ± 4 ^b
Mn	6.00 ± 0.45	7.94 ± 1.13 ^a	5.86 ± 0.13 ^b	6.73 ± 0.64 ^b	7.04 ± 0.86 ^a	7.15 ± 0.85 ^a	5.71 ± 0.24 ^a	8.21 ± 0.13 ^a	5.51 ± 0.35 ^b	5.61 ± 0.14 ^b	5.15 ± 0.28 ^a	5.32 ± 0.51 ^a	6.30 ± 0.45 ^a	6.03 ± 0.13 ^a	6.00 ± 0.88 ^a	6.86 ± 0.44 ^a
Mo	0.09 ± 001	0.34 ± 0.01 ^a	0.26 ± 0.01 ^b	0.31 ± 0.01 ^c	0.31 ± 0.01 ^a	0.23 ± 0.01 ^b	0.28 ± 0.01 ^c	0.36 ± 0.02 ^a	0.25 ± 0.01 ^b	0.24 ± 0.01 ^b	0.34 ± 0.01 ^a	0.19 ± 0.02 ^b	0.20 ± 0.02 ^b	0.36 ± 0.02 ^a	0.33 ± 0.01 ^a	0.24 ± 0.02 ^b

Pb*	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16
Se	0.30 ± 0.01	1.20 ± 0.01 ^a	0.91 ± 0.04 ^b	1.00 ± 0.06 ^c	1.20 ± 0.02 ^a	1.40 ± 0.07 ^b	0.94 ± 0.05 ^c	1.35 ± 0.10 ^a	0.99 ± 0.08 ^b	0.87 ± 0.03 ^b	1.33 ± 0.07 ^{aa}	1.08 ± 0.07 ^{ba}	0.96 ± 0.11 ^b	1.15 ± 0.04 ^a	1.02 ± 0.17 ^a	0.89 ± 0.04 ^a
V	0.03 ± 0.01	0.06 ± 0.01 ^a	0.24 ± 0.02 ^b	0.24 ± 0.01 ^b	0.05 ± 0.01 ^a	0.16 ± 0.01 ^b	0.20 ± 0.01 ^b	0.07 ± 0.01 ^a	0.16 ± 0.01 ^b	0.15 ± 0.01 ^b	0.04 ± 0.01 ^a	0.15 ± 0.01 ^b	0.20 ± 0.01 ^c	0.14 ± 0.01 ^a	0.43 ± 0.01 ^b	0.23 ± 0.01 ^a
Zn	6.3 ± 0.5	11.1 ± 1.4 ^a	21.4 ± 2.0 ^b	22.2 ± 1.5 ^b	10.8 ± 0.5 ^a	21.0 ± 0.5 ^b	17.7 ± 1.1 ^b	10.0 ± 1.0 ^a	9.62 ± 0.82 ^{ba}	14.5 ± 1.5 ^{cb}	13.7 ± 0.8 ^a	10.7 ± 0.8 ^a	6.00 ± 0.57 ^b	11.0 ± 0.8 ^a	16.7 ± 0.7 ^b	13.7 ± 0.4 ^b

Al and Zn, determined by MIP OES; other analytes, determined by ICP-MS/MS; * $\mu\text{g kg}^{-1}$
the same letter in a line for the same pond did not present significant differences (Tukey, $p < 0.05$).

S4: Correlation of content of Al, As, Co, Cu, Mn, Se, V and Zn in shrimp samples from several stages of life

