Supplementary Materials

Table S1. Eigenvalues and proportion of variance explained by each principal component (PC) derived from the PCA of trace element concentrations in *A. anguilla* muscle tissue. PC1 and PC2 together account for more than half of the total variance (55.6%), capturing the main gradients in elemental composition among sites.

	eigenvalue	variance.percent	cumulative.variance.percent
Dim.1	5.868639233	36.67899521	36.67900
Dim.2	3.024560514	18.90350321	55.58250
Dim.3	2.759154572	17.24471607	72.82721
Dim.4	1.055617523	6.59760952	79.42482
Dim.5	0.749619242	4.68512027	84.10994
Dim.6	0.714517993	4.46573746	88.57568
Dim.7	0.565334304	3.53333940	92.10902
Dim.8	0.351524351	2.19702719	94.30605
Dim.9	0.262961819	1.64351137	95.94956
Dim.10	0.208984033	1.30615020	97.25571
Dim.11	0.158948610	0.99342881	98.24914
Dim.12	0.095035968	0.59397480	98.84311
Dim.13	0.085983067	0.53739417	99.38051
Dim.14	0.071308215	0.44567634	99.82618
Dim.15	0.022355473	0.13972171	99.96591
Dim.16	0.005455082	0.03409427	100.00000

Table S2. Loadings of the 16 trace elements on the first three principal components (PC1–PC3) obtained from the PCA of muscle samples from *A. anguilla*. High positive or negative loadings indicate the strength and direction of the association of each element with the corresponding PC axis.

	Dim.1	Dim.2	Dim.3
Al	-0.7427528	0.29771638	0.35841623
As	-0.3341762	-0.66076612	0.44396591
Ba	-0.7573416	0.39963074	0.33557191
Bi	-0.5063864	-0.71232930	0.21615944
Cd	-0.6928463	0.11349913	-0.45858105
Co	-0.3120319	0.79304575	-0.07430392
Cr	-0.8304308	-0.02488582	-0.32858068
Cu	-0.7442605	0.15302837	-0.25843034
Fe	-0.8558644	-0.14891117	-0.13355078
Mn	0.1229013	0.35646749	0.83839479
Mo	-0.9233966	-0.15512450	-0.16754741
Ni	-0.6154329	0.20837664	0.10664155
Pb	-0.4844702	-0.08181831	0.55497764
Se	-0.1298857	0.83016364	-0.16774646
Sr	-0.1605504	0.13414523	0.88174119
Zn	-0.5458626	-0.48555777	-0.09945513

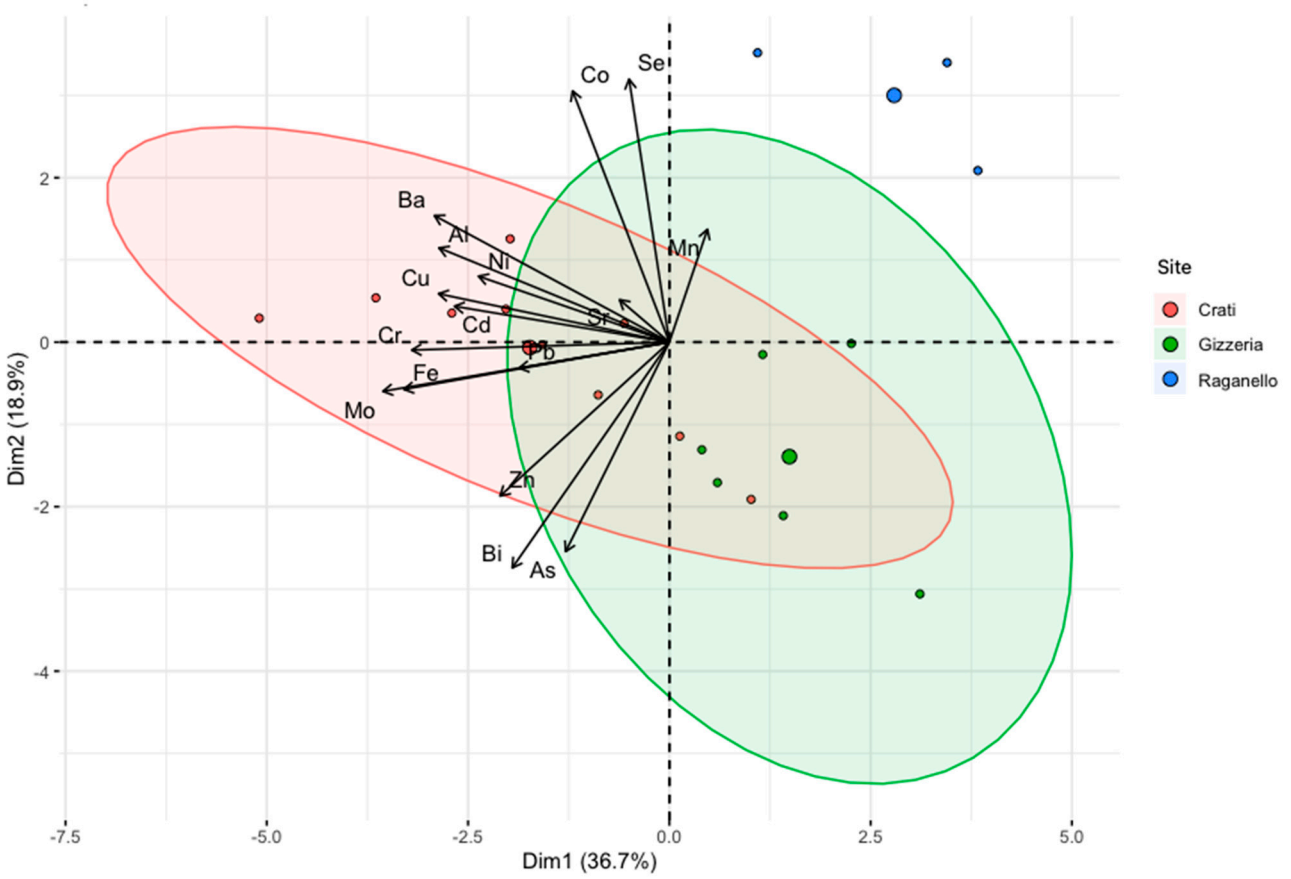


Figure S1. Principal Component Analysis (PCA) of the 16 trace elements measured in the muscle of *A. anguilla* from the three study sites. PC1 and PC2 explain 36.7% and 18.9% of the total variance, respectively (55.6% cumulative). Elements with similar loadings cluster along PC1, reflecting a general contamination gradient (Al, Ba, Cd, Cr, Cu, Fe, Mo, Ni, Zn), while PC2 differentiates essential elements (Co, Se) from others. Symbols represent individual samples; arrows indicate variable loadings.