

**SUPPLEMENTARY MATERIAL**

**Table S1.** Post-hoc pairwise comparisons after ANOVAs for repeated analyses conducted on ragged-tooth shark muscle samples. Significant results are highlighted.

$\delta^{13}\text{C}$	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$\delta^{15}\text{N}$		0.859	< 0.001	0.939	< 0.01	0.358	0.724	< 0.001	0.124	0.999	< 0.01
$H_2O$											
PE	< 0.001		0.030	1.000	0.572	1.000	1.000	0.036	0.978	0.999	0.339
PE $H_2O$	1.000	< 0.001		0.015	0.974	0.238	0.062	1.000	0.550	< 0.01	0.998
Cx	< 0.001	1.000	< 0.001		0.417	0.997	1.000	0.018	0.934	1.000	0.219
Cx $H_2O$	1.000	< 0.001	0.997	< 0.001		0.960	0.736	0.981	0.999	0.121	1.000
CM1	0.054	0.726	0.212	0.881	0.013		1.000	0.270	1.000	0.900	0.841
CM1 $H_2O$	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		0.075	0.996	0.995	0.500
CM2	0.541	0.112	0.871	0.224	0.255	0.994	< 0.001		0.593	< 0.01	0.999
CM2 $H_2O$	1.000	< 0.001	1.000	< 0.001	1.000	0.090	< 0.001	0.670		0.622	0.983
CEth	0.025	0.866	0.116	0.959	< 0.01	1.000	< 0.001	0.970	0.043		0.047
CEth $H_2O$	0.998	< 0.01	1.000	< 0.01	0.961	0.439	< 0.001	0.977	1.000	0.280	

  

PercC	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
PercN											
$H_2O$		< 0.001	0.987	< 0.001	1.000	< 0.001	0.245	0.015	1.000	< 0.001	0.952
PE	< 0.001		< 0.001	0.268	< 0.001	0.999	0.628	0.994	< 0.001	1.000	< 0.001
PE $H_2O$	0.592	< 0.001		< 0.001	0.990	< 0.001	< 0.01	< 0.001	1.000	< 0.001	1.000
Cx	< 0.001	0.403	0.032		< 0.001	0.824	< 0.001	0.014	< 0.001	0.164	< 0.001
Cx $H_2O$	0.030	< 0.001	0.969	0.602		< 0.001	0.228	0.013	0.998	< 0.001	0.959
CM1	0.018	< 0.001	< 0.001	< 0.001	< 0.001		0.133	0.726	< 0.001	0.993	< 0.001
CM1 $H_2O$	< 0.001	0.957	< 0.001	0.996	0.082	< 0.001		0.996	0.033	0.773	< 0.01
CM2	0.193	< 0.001	< 0.001	< 0.001	< 0.001	0.999	< 0.001		< 0.001	0.999	< 0.001
CM2 $H_2O$	0.667	< 0.001	1.000	0.022	0.948	< 0.001	< 0.001	< 0.001		< 0.001	1.000
CEth	0.788	< 0.001	0.005	< 0.001	< 0.001	0.818	< 0.001	0.998	0.008		< 0.001
CEth $H_2O$	1.000	< 0.001	0.965	< 0.001	0.237	< 0.001	< 0.001	0.022	0.981	0.279	

  

CN <sub>atom</sub>	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$H_2O$		< 0.001	0.690	< 0.001	< 0.001	< 0.001	< 0.001	0.495	0.012	< 0.001	1.000
PE			< 0.001	1.000	< 0.001	< 0.001	0.438	< 0.001	< 0.001	< 0.001	< 0.001
PE $H_2O$				< 0.001	< 0.001	< 0.01	< 0.001	1.000	0.836	< 0.001	0.773
Cx					< 0.001	< 0.001	0.294	< 0.001	< 0.001	< 0.001	< 0.001
Cx $H_2O$						1.000	< 0.01	< 0.001	0.083	1.000	< 0.001
CM1							< 0.001	0.010	0.460	0.928	< 0.001
CM1 $H_2O$								< 0.001	< 0.001	0.065	< 0.001
CM2									0.942	< 0.001	0.588
CM2 $H_2O$										< 0.01	0.019
CEth											< 0.001
CEth $H_2O$											

**Table S2.** Post-hoc pairwise comparisons after ANOVAs for repeated analyses conducted on Cape knifejaw muscle samples. Significant results are highlighted.

$\delta^{15}\text{N}$	$\delta^{13}\text{C}$	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$H_2O$			1.000	< 0.001	1.000	< 0.001	0.019	0.999	< 0.001	0.973	0.638	0.305
PE		< 0.001		< 0.001	1.000	< 0.001	0.036	0.992	< 0.001	0.992	0.494	0.434
PE $H_2O$		0.957	< 0.001		< 0.001	0.043	< 0.001	< 0.001	0.787	< 0.001	< 0.001	< 0.001
Cx		< 0.001	1.000	< 0.001		< 0.001	0.154	0.887	< 0.001	1.000	0.187	0.787
Cx $H_2O$		0.892	< 0.001	0.109	< 0.001		0.875	< 0.001	0.928	< 0.01	< 0.001	0.228
CM1		< 0.01	0.027	0.130	0.097	< 0.001		< 0.001	0.073	0.474	< 0.001	0.995
CM1 $H_2O$		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	0.535	0.989	0.030
CM2		< 0.01	< 0.01	0.021	0.021	< 0.001	1.000	< 0.001		< 0.001	< 0.001	< 0.01
CM2 $H_2O$		0.949	< 0.001	1.000	< 0.001	0.102	0.141	< 0.001	0.406		0.040	0.980
CEth		< 0.001	1.000	< 0.001	1.000	< 0.001	0.023	< 0.001	< 0.01	< 0.001		< 0.001
CEth $H_2O$		0.638	< 0.001	1.000	< 0.001	0.014	0.486	< 0.001	0.824	1.000	< 0.001	

  

PercC	PercN	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$H_2O$			0.999	1.000	< 0.01	1.000	< 0.001	0.960	0.025	0.913	< 0.01	0.886
PE		0.678		0.913	0.092	0.944	< 0.01	1.000	0.269	0.374	0.120	0.330
PE $H_2O$		0.166	0.999		< 0.001	1.000	< 0.001	0.644	< 0.01	0.999	< 0.001	0.998
Cx		1.000	0.251	0.027		< 0.001	0.977	0.289	1.000	< 0.001	1.000	< 0.001
Cx $H_2O$		< 0.001	< 0.01	0.023	< 0.001		< 0.001	0.715	< 0.01	0.997	< 0.001	0.994
CM1		0.132	< 0.001	< 0.001	0.482	< 0.001		< 0.01	0.838	< 0.001	0.960	< 0.001
CM1 $H_2O$		< 0.001	< 0.001	< 0.001	< 0.001	0.919	< 0.001		0.595	0.132	0.351	0.110
CM2		0.993	0.087	< 0.01	1.000	< 0.001	0.781	< 0.001		< 0.001	1.000	< 0.001
CM2 $H_2O$		< 0.001	< 0.01	0.059	< 0.001	1.000	< 0.01	0.781	< 0.001	< 0.001	< 0.001	1.000
CEth		1.000	0.287	0.033	1.000	< 0.001	0.434	< 0.001	1.000	< 0.001		< 0.001
CEth $H_2O$		< 0.01	0.597	0.976	< 0.001	0.499	< 0.001	< 0.01	< 0.001	0.710	< 0.001	

  

CN <sub>atom</sub>	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$H_2O$		< 0.001	0.277	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.494
PE			0.032	0.881	0.030	0.997	< 0.001	0.998	0.223	0.023	0.010
PE $H_2O$				< 0.001	< 0.001	< 0.001	< 0.001	0.323	< 0.001	< 0.001	1.000
Cx					0.791	1.000	< 0.001	0.306	0.994	0.745	< 0.001
Cx $H_2O$						0.354	0.024	< 0.001	1.000	1.000	< 0.001
CM1							< 0.001	0.745	0.846	0.307	< 0.001
CM1 $H_2O$								< 0.001	< 0.001	0.032	< 0.001
CM2									0.017		0.157
CM2 $H_2O$										0.999	< 0.001
CEth											< 0.001
CEth $H_2O$											

**Table S3.** Post-hoc pairwise comparisons after ANOVAs for repeated analyses conducted on ragged-tooth shark blood samples. Significant results are highlighted.

$\delta^{15}\text{N}$ \ $\delta^{13}\text{C}$	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$H_2O$		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.948	< 0.001	0.146	1.000	0.012
PE	< 0.001		< 0.001	1.000	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
PE $H_2O$	0.997	< 0.001		< 0.001	1.000	1.000	< 0.001	0.679	0.024	< 0.001	0.237
Cx	< 0.001	0.962	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cx $H_2O$	1.000	< 0.001	0.999	< 0.001		0.999	< 0.001	0.744	0.017	< 0.001	0.191
CM1	1.000	< 0.001	0.882	< 0.001	1.000		< 0.01	0.202	0.195	< 0.001	0.728
CM1 $H_2O$	< 0.001	0.130	< 0.001	< 0.01	< 0.001	< 0.001		< 0.001	0.942	1.000	0.467
CM2	0.929	< 0.001	1.000	< 0.001	0.954	0.568	< 0.001		< 0.001	< 0.001	< 0.001
CM2 $H_2O$	1.000	< 0.001	1.000	< 0.001	1.000	0.974	< 0.001	0.999		0.591	0.999
CEth	0.137	< 0.001	< 0.01	< 0.001	0.108	0.493	< 0.01	< 0.001	0.022		0.120
CEth $H_2O$	0.996	< 0.001	1.000	< 0.001	0.998	0.862	< 0.001	1.000	1.000	< 0.01	

  

PercC \ PercN	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$H_2O$		< 0.001	0.282	< 0.001	0.500	< 0.001	< 0.001	< 0.001	0.776	< 0.001	0.977
PE	< 0.001		< 0.001	0.040	< 0.001	1.000	< 0.001	0.093	< 0.001	1.000	< 0.001
PE $H_2O$	1.000	< 0.001		< 0.001	1.000	< 0.001	0.010	< 0.001	1.000	< 0.001	0.007
Cx	< 0.001	0.988	< 0.001		< 0.001	0.011	< 0.001	< 0.001	< 0.001	0.078	< 0.001
Cx $H_2O$	0.984	< 0.001	0.854	< 0.01		< 0.001	0.003	< 0.001	1.000	< 0.001	0.024
CM1	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001		< 0.001	0.232	< 0.001	1.000	< 0.001
CM1 $H_2O$	0.278	< 0.01	0.087	0.168	0.058	< 0.001		0.829	< 0.001	< 0.001	< 0.001
CM2	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	1.000	< 0.001		< 0.001	0.048	< 0.001
CM2 $H_2O$	0.993	< 0.001	0.906	< 0.01	1.000	< 0.001	0.926	< 0.001		< 0.001	0.080
CEth	0.093	< 0.001	0.286	< 0.001	< 0.01	0.913	< 0.001	0.967	< 0.01		< 0.001
CEth $H_2O$	1.000	< 0.001	0.995	< 0.001	1.000	< 0.001	0.645	< 0.001	1.000	0.017	

  

CN <sub>atom</sub>	$H_2O$	PE	PE $H_2O$	Cx	Cx $H_2O$	CM1	CM1 $H_2O$	CM2	CM2 $H_2O$	CEth	CEth $H_2O$
$H_2O$		< 0.001	0.394	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.001	1.000
PE			< 0.001	1.000	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.147	< 0.001
PE $H_2O$				< 0.001	0.264	< 0.001	< 0.001	0.922	0.816	< 0.001	0.527
Cx					< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.030	< 0.001
Cx $H_2O$						< 0.001	< 0.001	0.992	0.999	< 0.001	< 0.001
CM1							1.000	< 0.001	< 0.001	0.206	< 0.001
CM1 $H_2O$								< 0.001	< 0.001	0.682	< 0.001
CM2									1.000	< 0.001	0.011
CM2 $H_2O$										< 0.001	< 0.01
CEth											< 0.001
CEth $H_2O$											