

Figure S1. MitoB uptake detected with ion-selective electrode specific for detection of TPP^+ in isolated liver mitochondria of sculpin *Arctedius lateralis*. Sequential additions of MitoB was followed by addition of complex I substrates (pyruvate, malate, and glutamate; PMG), complex II substrate (succinate), and uncoupler carbonyl cyanide 4-(trifluoromethoxy)phenylhydrazone (FCCP). See methods section for details.

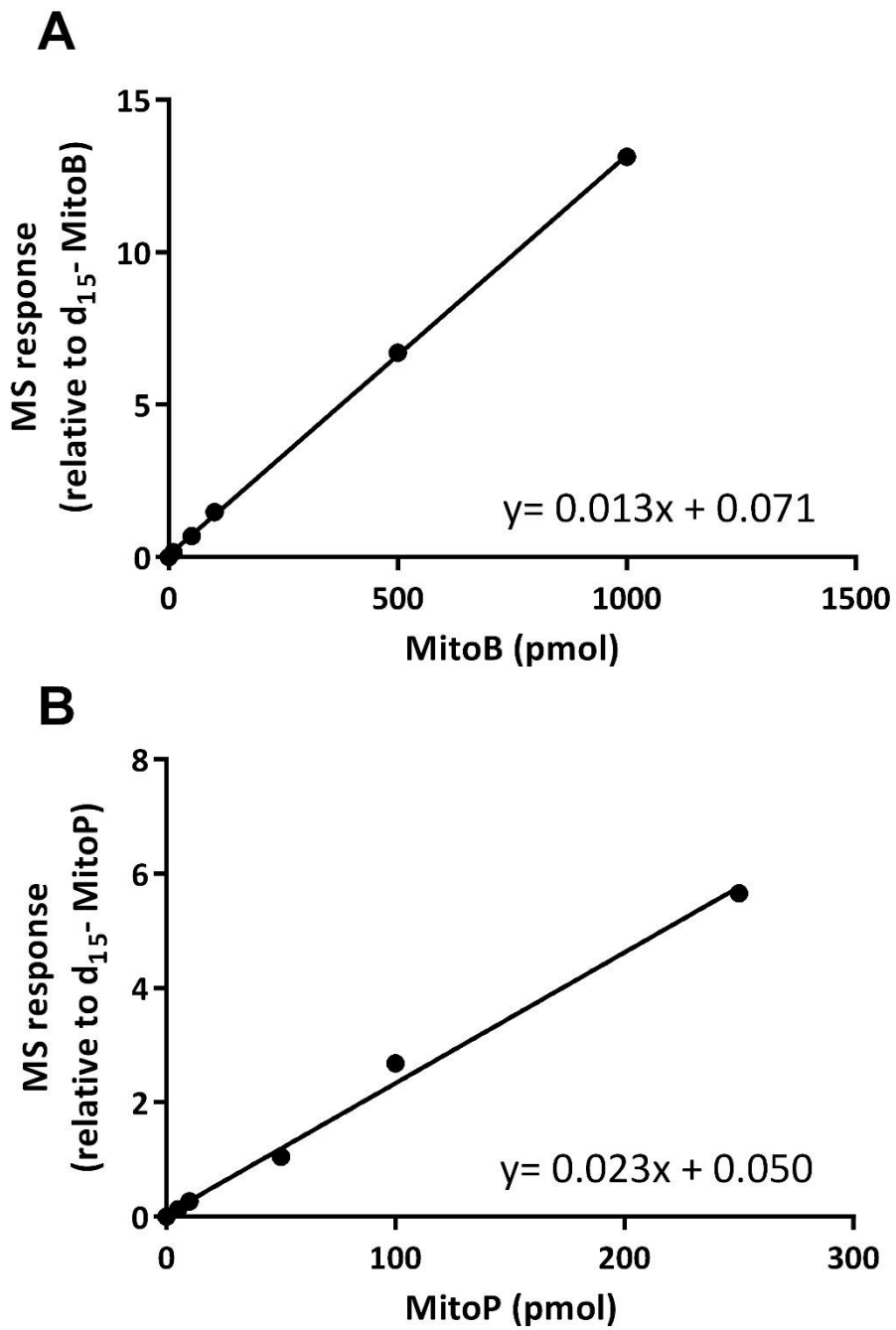


Figure S2. MitoB and MitoP standard curves for LC-MS/MS

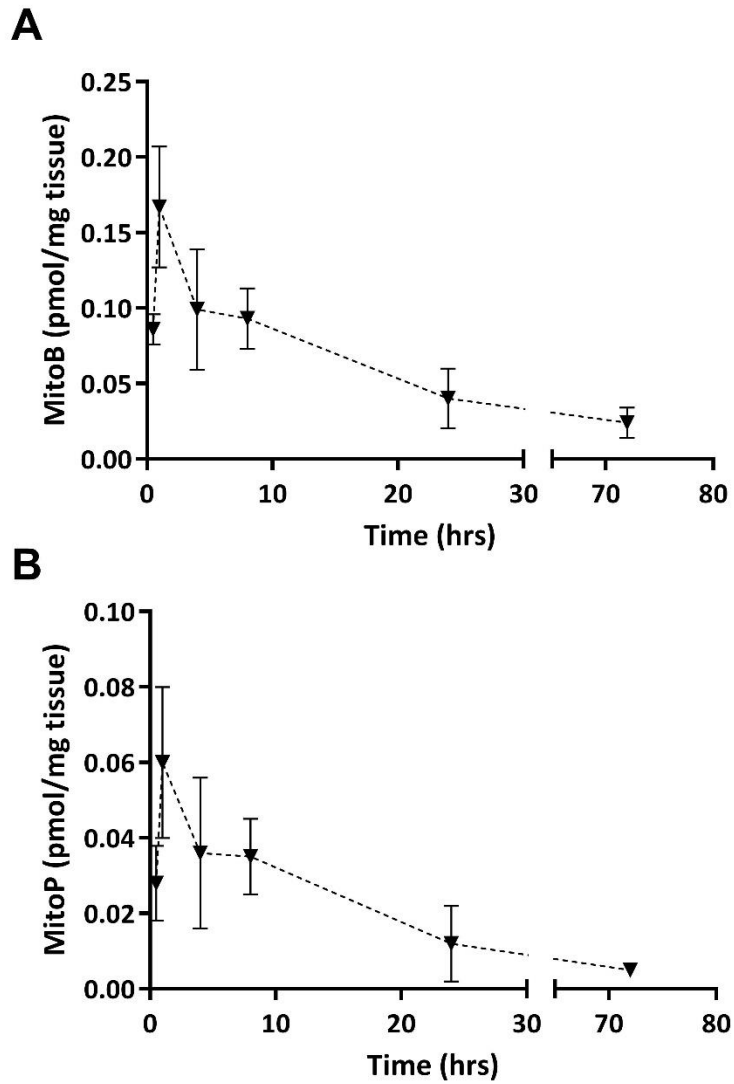


Figure S3. White muscle MitoB (top figure), converted MitoP (middle), and MitoP/MitoB (bottom) over 72hr post-injection in normoxic resting *O. maculosus*.

Tissue	Normoxia	Hypoxia	Hypoxia Recovery	Normoxia	Hyperoxia	Hyperoxia Recovery
<i>Oligocottus maculosus</i>						
Brain	35.71 ± 3.28 ^a	126.88 ± 39.87 ^b	56.73 ± 9.69 ^{ab}	34.51 ± 3.24 ^a	141.40 ± 30.71 ^b	83.04 ± 21.29 ^{ab}
Liver	30.20 ± 4.49 ^a	41.26 ± 11.38 ^a	47.41 ± 4.15 ^a	38.52 ± 11.65 ^a	47.72 ± 9.76 ^a	27.15 ± 6.40 ^a
Gill	102.79 ± 14.78 ^a	96.17 ± 15.60 ^a	137.42 ± 7.19 ^a	96.81 ± 18.71 ^a	105.45 ± 31.53 ^a	107.38 ± 25.35 ^a
<i>Scorpaenichthys marmoratus</i>						
Brain	74.62 ± 15.73 ^a	58.10 ± 9.19 ^a	46.89 ± 5.40 ^a	63.79 ± 13.26 ^a	35.81 ± 10.72 ^a	45.28 ± 9.96 ^a
Liver	27.85 ± 7.29 ^a	18.60 ± 6.51 ^a	36.43 ± 7.76 ^a	31.10 ± 5.55 ^a	53.19 ± 17.47 ^a	54.51 ± 14.39 ^a
Gill	54.32 ± 6.57 ^a	142.78 ± 31.56 ^a	130.60 ± 27.38 ^a	59.43 ± 10.53 ^a	114.94 ± 42.83 ^a	35.65 ± 4.03 ^a

Table S1. TBARS (in pmol/mg protein) to 3.5 kPa hypoxia-recovery and 64.0 kPa hyperoxia-recovery. One way ANOVA was used to analyse for each tissue the effect of hypoxia -recovery on TBARS .

Tissue	Normoxia	Hypoxia	Hypoxia Recovery	Normoxia	Hyperoxia	Hyperoxia Recovery
<i>Oligocottus maculosus</i>						
Brain	14.40 ± 0.96 ^a	17.00 ± 4.60 ^a	12.60 ± 1.28 ^a	14.2 ± 0.98 ^a	18.00 ± 1.56 ^a	17.00 ± 1.92 ^a
Liver	167.80 ± 32.80 ^a	54.80 ± 22.00 ^b	120.20 ± 27.00 ^{ab}	191.00 ± 24.20 ^a	156.80 ± 37.80 ^a	106.2 ± 15.40 ^a
Gill	21.80 ± 1.66 ^a	21.60 ± 1.42 ^a	23.4 ± 0.60 ^a	21.80 ± 3.40 ^a	21.60 ± 0.98 ^a	22.20 ± 2.80 ^a
<i>Scorpaenichthys marmoratus</i>						
Brain	15.00 ± 0.76 ^a	15.40 ± 1.24 ^a	17.40 ± 1.10 ^a	17.60 ± 2.40 ^a	13.80 ± 1.12 ^a	17.20 ± 3.00 ^a
Liver	109.60 ± 3.40 ^a	84.80 ± 16.40 ^a	173.20 ± 39.80 ^a	119.80 ± 22.80 ^a	263.20 ± 57.20 ^a	201.60 ± 38.80 ^a
Gill	23.20 ± 0.50 ^a	24.40 ± 3.00 ^a	28.20 ± 5.40 ^a	26.60 ± 8.20 ^a	22.20 ± 3.40 ^a	27.00 ± 0.50 ^a

Table S2 TOSC levels (expressed in $\mu\text{mole H}_2\text{O}_2/\text{min}/\text{mg}$ protein) to 3.5 kPa hypoxia-recovery and 64.0 kPa hyperoxia-recovery. One way ANOVA was used to analyse the effect of hypoxia -recovery on TBARS in each tissue.