Table S1. Effects of dietary antioxidants (high or low antioxidant diet, AH or AL, respectively) on the activity of enzymatic antioxidants (GPx, SOD, CAT), non-enzymatic antioxidant capacity (ORAC), and markers of oxidative damage (protein carbonyls and lipid hydroperoxides) in three different tissues (pectoralis, liver, and heart) in Season females sampled in fall. These fall samples from Season females were not included in the testing of the main effect of Diet (Hypothesis H1) because too many tissue samples thawed in transit from Germany to the USA (see methods for details). Estimated means and standard errors listed were calculated using estimated marginal means. Linear mixed models were fit for all analyses using bird ID as a random factor. ΔAIC_c is the difference between the final model used and the global model with all covariates included. Estimates for the leg are not included because there were not enough observations for each diet to include in the model.

AO Measure	Organ	Estimated mean ± s.e.m.	d.f.	*F*	p	ΔAIC_c
GPx	Pectoralis	AH: 4.96 ± 0.33	7, 17	0.13	0.717	14.2
		AL: 5.12 ± 0.29				
	Liver	AH: 3.23 ± 0.38		1.40	0.244	
		AL: 3.83 ± 0.33				
	Heart	AH: 4.95 ± 0.38		20.95	0.0001	
		AL: 7.28 ± 0.33				
CAT	Pectoralis	AH: 3.00 ± 0.44	7, 20	0	0.999	16.01
		AL: 3.00 ± 0.39				
	Liver	AH: 5.82 ± 0.44		0.11	0.741	
		AL: 6.02 ± 0.39				
	Heart	AH: 1.72 ± 0.52		0.16	0.690	
		AL: 1.98 ± 0.39				
SOD	Pectoralis	AH: 0.52 ± 0.38	8, 19	0.02	0.892	8.75
		AL: 0.45 ± 0.34				
	Liver	AH: 1.39 ± 0.38		0.16	0.693	
		AL: 1.60 ± 0.34				
	Heart	AH: 2.70 ± 0.44		2.64	0.112	
		AL: 3.63 ± 0.34				
Protein carbonyl	Pectoralis	AH: 3.63 ± 0.71	7, 19	0.81	0.374	17.97
		AL: 4.43 ± 0.53				
	Liver	AH: 4.80 ± 0.60		0.13	0.723	
		AL: 4.52 ± 0.53				
	Heart	AH: 4.28 ± 0.60		2.90	0.097	

		AL: 2.82 ± 0.61				
Lipid hydroperoxides	Pectoralis	AH: 3.21 ± 0.61 AL: 4.24 ± 0.53	7, 17	1.64	0.209	19.74
	Liver	AH: 3.47 ± 0.52 AL: 4.16 ± 0.62		0.74	0.395	
	Heart	AH: 5.11 ± 0.52 AL: 5.14 ± 0.46		0.001	0.971	
ORAC (peroxyls)	Pectoralis	AH: 12.5 ± 0.33 AL: 12.3 ± 0.30	7, 23	0.13	0.716	9.21
	Liver	AH: 13.0 ± 0.33 AL: 12.8 ± 0.30		0.22	0.642	
	Heart	AH: 12.4 ± 0.33 AL: 11.6 ± 0.30		2.88	0.098	
ORAC (hydroxyls)	Pectoralis	AH: 11.1 ± 0.23 AL: 10.8 ± 0.21	8, 22	0.001	0.980	9.49
	Liver	AH: 11.7 ± 0.23 AL: 11.6 ± 0.21		0.14	0.715	
	Heart	AH: 12.0 ± 0.23 AL: 11.4 ± 0.21		0.82	0.369	

Table S2. Effects of dietary antioxidants (high or low antioxidant diet, AH or AL, respectively) on oxidative damage (protein carbonyls and lipid hydroperoxides) and antioxidant capacity (ORAC) in four different tissues (pectoralis, leg, liver, and heart) in flight-trained Reproductive females in spring. Estimated means and standard errors listed were calculated using estimated marginal means. Linear mixed models were fit for all analyses using bird ID as a random factor. ΔAICc is the difference between the final model used and the global model with all covariates included. Statistical analyses for enzymatic antioxidants are reported in the main text.

AO Measure	Organ	Estimated mean ± s.e.m.	d.f.	F	p	ΔAIC_c
Protein carbonyl	Pectoralis	AH: 3.68 ± 0.48 AL: 3.72 ± 0.56	4, 49	0.003	0.955	6.24
	Leg	AH: 3.81 ± 0.57 AL: 4.21 ± 0.52		0.27	0.608	
	Liver	AH: 4.50 ± 0.62 AL: 5.09 ± 0.46		0.59	0.445	
	Heart	AH: 4.09 ± 0.56 AL: 3.13 ± 0.57		1.46	0.231	
Lipid hydroperoxides	Pectoralis	AH: 3.75 ± 0.64 AL: 3.57 ± 0.41	3, 53	0.06	0.808	8.67
	Leg	AH: 5.55 ± 0.47 AL: 4.92 ± 0.57		0.73	0.397	
	Liver	AH: 1.93 ± 0.47 AL: 2.10 ± 0.44		0.07	0.794	
	Heart	AH: 5.01 ± 0.47 AL: 4.74 ± 0.41		0.20	0.660	
ORAC (peroxyls)	Pectoralis	AH: 12.2 ± 0.23 AL: 11.9 ± 0.20	3, 59	1.31	0.257	8.16
	Leg	AH: 12.2 ± 0.22 AL: 12.4 ± 0.19		0.97	0.330	
	Liver	AH: 15.5 ± 0.22 AL: 12.5 ± 0.19		0.01	0.938	
	Heart	AH: 12.1 ± 0.22 AL: 12.2 ± 0.19		0.06	0.802	
ORAC (hydroxyls)	Pectoralis	AH: 10.7 ± 0.18	4, 58	0.05	0.817	5.06

Leg	AL: 10.8 ± 0.16 AH: 11.2 ± 0.17 AL: 11.5 ± 0.15	2.58	0.113
Liver	AH: 11.5 ± 0.17 AL: 11.5 ± 0.15	0.04	0.847
Heart	AH: 11.3 ± 0.17 AL: 11.5 ± 0.15	0.68	0.413