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Animal Production Science

Supplementary Material

Partial substitution of barley with maize meal or flaked meal in bovine diets: effects on fatty acid and α-tocopherol concentration and the oxidative stability of beef under simulated retail display

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Table S1. Dry matter intake,live weight and carcass weightof late maturing suckler-bred bulls finished on three different diets[1]

[1] from Lenehan (2016)

BC: barley, MM: 50% barley with 50% maize meal and FM: 50% barley with 50% flaked toasted maize (fresh weight basis)

*P<0.05

† tendency (P<0.1)

[a,b,c] means of diet within rows assigned different superscripts differ significantly (P < 0.05)

	Diet				
	BC	MM	FM	SEM	P-value
Concentrate (kg/day)	9.93[ab]	9.17[a]	10.17[b]	0.29	*
Silage (kg/day)	1.42[b]	1.43[b]	1.29[a]	0.03	*
Total (kg/day)	11.40	10.60	11.46	0.29	†
Daily liveweight gain (kg/day)	1.92	2.23	2.03	0.12	†
Slaughter weight (kg)	708	732	713	8.9	†
Carcass weight (kg)	406[a]	420[b]	409[ab]	4.6	*
Fat score	8.3	7.7	7.4	0.32	†

Table S2 Fatty acid proportions (%) in intramuscular fat from *M. longissimus thoracis* of late maturing suckler-bred bulls, finished on barley (BC), maize meal (MM) and flaked maize (FM) concentrates.

Samples were stored in a modified atmosphere (O_2:CO_2; 80:20) and subjected to simulated retail display (4°C,1000 lux for 12 h out of 24 h) for 14 days

SFA: saturated fatty acids; MUFA: monounsaturated fatty acids; PUFA: polyunsaturated fatty acids

α-tocopherol:PUFA: ratio of α-tocopherol to PUFA

α-tocopherol:HP-PUFA: ratio of α-tocopherol to highly peroxidizable PUFA

HP-PUFA: highly peroxidizable PUFA, calculated as the sum of PUFA with 3 or more double bonds

[a, b, c] Treatment means within rows, assigned different superscripts differ significantly (P < 0.05)

*: P < 0.05; **: P < 0.01; ***: P < 0.001

	Diet				Days of storage			P-Values		
	BC	MM	FM	SEM	Day 0	Day 14	SEM	Diet	Day	Diet*Day
Fatty acids (proportion x 100)										
C10:0	0.03	0.03	0.03	0.01	0.03	0.03	0.01	n.s.	n.s.	n.s.
C12:0	0.06	0.04	0.06	0.01	0.05	0.06	0.01	n.s.	n.s.	n.s.
C14:0	2.82	2.69	2.75	0.10	2.71	2.79	0.08	n.s.	n.s.	n.s.
C14:1	0.48	0.40	0.36	0.04	0.44	0.39	0.03	n.s.	n.s.	n.s.
C15:0	0.45	0.50	0.49	0.03	0.49	0.47	0.03	n.s.	n.s.	n.s.
C15:1	0.12	0.14	0.16	0.02	0.17	0.11	0.01	n.s.	***	n.s.
C16:0	26.98	27.10	27.62	0.49	27.00	27.47	0.40	n.s.	n.s.	n.s.
C16:1	3.33	3.16	2.89	0.14	3.15	3.11	0.12	n.s.	n.s.	n.s.
C17:0	1.14	1.42	1.33	0.09	1.30	1.29	0.08	n.s.	n.s.	n.s.
C17:1	0.21	0.25	0.18	0.10	0.13	0.30	0.08	n.s.	n.s.	n.s.
C18:0	16.86	16.37	17.25	0.45	16.33	17.33	0.37	n.s.	*	n.s.
C18:1*n*-9*c*	37.72[b]	35.58[ab]	33.35[a]	0.67	34.92	36.18	0.55	***	n.s.	n.s.
C18:1*n*-7	1.83	2.00	1.94	0.07	1.90	1.94	0.06	n.s.	n.s.	n.s.
C18:2*n*-6*t*	0.02	0.03	0.02	0.01	0.02	0.03	0.01	n.s.	n.s.	*

C18:2*n*-6*c*	4.52[a]	5.95[ab]	6.99[b]	0.43	6.53	5.10	0.35	***	*	n.s.
C20:0	0.12	0.10	0.21	0.04	0.15	0.13	0.04	n.s.	n.s.	n.s.
C18:3*n*-6	0.02	0.04	0.02	0.01	0.03	0.02	0.01	n.s.	n.s.	n.s.
C20:1*n*-9	0.14[ab]	0.15[b]	0.12[a]	0.01	0.14	0.13	0.01	*	n.s.	n.s.
C18:3*n*-3	0.68[a]	0.77[ab]	0.85[b]	0.05	0.87	0.66	0.04	*	***	n.s.
C18:2*c*9 *t*11	0.15	0.20	0.17	0.02	0.18	0.17	0.02	n.s.	n.s.	n.s.
C20:2	0.06	0.07	0.11	0.02	0.07	0.08	0.02	n.s.	n.s.	n.s.
C22:0	0.09	0.10	0.11	0.02	0.12	0.08	0.02	n.s.	n.s.	n.s.
C20:3*n*-6	0.23[a]	0.32[ab]	0.33[b]	0.03	0.35	0.24	0.02	*	***	n.s.
C20:3*n*-3	0.02	0.02	0.01	0.00	0.02	0.01	0.00	n.s.	*	n.s.
C20:4*n*-6	0.92	1.19	1.22	0.10	1.37	0.84	0.09	n.s.	***	n.s.
C20:*4n*-3	0.01	0.02	0.02	0.01	0.02	0.02	0.00	n.s.	n.s.	n.s.
C22:2	0.06	0.10	0.07	0.01	0.10	0.06	0.01	n.s.	*	n.s.
C24:0	0.01	0.03	0.02	0.01	0.02	0.02	0.01	n.s.	n.s.	n.s.
C20:5*n*-3	0.24	0.36	0.35	0.03	0.39	0.25	0.03	*	*	n.s.
C22:5*n*-3	0.44[a]	0.60[ab]	0.63[b]	0.05	0.71	0.40	0.04	*	***	n.s.
C22:6*n*-3	0.03	0.07	0.06	0.01	0.07	0.04	0.01	n.s.	n.s.	n.s.
Others	0.18	0.23	0.25	0.05	0.20	0.23	0.05	n.s.	n.s.	n.s.
SFA	48.58	48.37	49.88	0.51	48.21	49.68	0.42	n.s.	*	n.s.
MUFA	43.84[b]	41.68[b]	39.01[a]	0.75	40.85	42.17	0.61	***	n.s.	n.s.
PUFA	7.41[a]	9.72[b]	10.86[b]	0.62	10.74	7.92	0.51	***	***	n.s.
n-6 PUFA	5.99[a]	7.88[b]	8.94[b]	0.52	8.66	6.54	0.43	***	***	n.s.
n-3 PUFA	1.42[a]	1.84[ab]	1.92[b]	0.13	2.07	1.38	0.11	*	***	n.s.
HP-PUFA	2.59[a]	3.37[b]	3.50[b]	0.24	3.83	2.48	0.24	*	***	n.s.