

10.1071/AN19240_AC

© CSIRO 2020

Supplementary Material: *Animal Production Science*, 2020, **60**(12), 1482–1490

Impact of inbreeding on milk fatty acids of a Brazilian Holstein cattle

*Eula Regina Carrara^A, Leila de Genova Gaya^{A,C}, José Teodoro de Paiva^A, Juliana Petrini^B,
Mayara Salvian^B, Gregori Alberto Rovadoscki^B, Arícia Chaves Zanetti Reis^A,
Paulo Fernando Machado^B and Gerson Barreto Mourão^B*

^ADepartment of Animal Science, Federal University of São João del-Rei, São João del-Rei,
Minas Gerais, Brazil.

^BDepartment of Animal Science, University of São Paulo, Piracicaba, São Paulo, Brazil.

^CCorresponding author. Email: genova@ufsj.edu.br

Supplementary Table 1. Estimates of variance components, heritabilities (h^2) and their respectively highest posterior density interval 95% (HPD 95%) for the evaluated traits

Fatty Acids ^A (%)	σ_a^2	HPD 95%	σ_c^2	HPD 95%	σ_e^2	HPD 95%	h^2	HPD (95%)
SFA	0,011651	[0,005814; 0,017780]	0,007659	[0,002694; 0,012620]	0,068138	[0,065510; 0,070660]	0,13	[0,07; 0,20]
UFA	0,001719	[0,000570; 0,002957]	0,002189	[0,000849; 0,003410]	0,035521	[0,034220; 0,036860]	0,04	[0,02; 0,07]
MUFA	0,001939	[0,000883; 0,003044]	0,001494	[0,000388; 0,002502]	0,026704	[0,025760; 0,027700]	0,06	[0,03; 0,10]
PUFA	0,000068	[0,000025; 0,000115]	0,000158	[0,000108; 0,000205]	0,001015	[0,000977; 0,001053]	0,05	[0,02; 0,09]
C16:0	0,002280	[0,001236; 0,003469]	0,001889	[0,000955; 0,002862]	0,014150	[0,013620; 0,014680]	0,12	[0,07; 0,18]
C18:0	0,000879	[0,000304; 0,001554]	0,000769	[0,000181; 0,001306]	0,010517	[0,010120; 0,010890]	0,08	[0,03; 0,15]
C18:1	0,001094	[0,000344; 0,001929]	0,001121	[0,000341; 0,001949]	0,019201	[0,018470; 0,019900]	0,05	[0,02; 0,09]

^ASFA = total saturated fatty acid; UFA = total unsaturated fatty acid; MUFA = monounsaturated fatty acid; PUFA = polyunsaturated fatty acid; C16:0 = palmitic fatty acid; C18:0 = stearic fatty acid; C18:1 = oleic fatty acid; σ_a^2 = direct additive genetic; σ_c^2 = animal permanent environment; σ_e^2 = residual variance.

Supplementary Table 2. Convergence test results according to Geweke criteria.

Fatty Acids ^A		σ_a^2	σ_c^2	σ_e^2	h^2
SFA	Z-Score	-0.1246	0.0658	0.0817	-0.1210
	p-value	0.9008	0.9475	0.9348	0.9040
UFA	Z-Score	0.6601	-0.4204	-0.5581	0.6640
	p-value	0.5091	0.6741	0.5767	0.5070
MUFA	Z-Score	-0.2505	0.0960	-1.1928	-0.2192
	p-value	0.8021	0.9235	0.2329	0.8264
PUFA	Z-Score	-0.1033	0.1558	-0.0031	-0.1055
	p-value	0.91769	0.8761	0.9974	0.9159
C16:0	Z-Score	0.4186	-0.4293	0.9789	0.3990
	p-value	0.6754	0.6676	0.3275	0.6898
C18:0	Z-Score	1.7000	-1.6080	-0.0975	1.7091
	p-value	0.0891	0.1078	0.9222	0.0874
C18:1	Z-Score	-1.2101	1.2075	-1.1289	-1.1904
	p-value	0.2262	0.2272	0.2589	0.2338

^ASFA = total saturated fatty acid; UFA = total unsaturated fatty acid; MUFA = monounsaturated fatty acid; PUFA = polyunsaturated fatty acid; C16:0 = palmitic fatty acid; C18:0 = stearic fatty acid; C18:1 = oleic fatty acid; σ_a^2 = direct additive genetic; σ_c^2 = animal permanent environment; σ_e^2 = residual variance.

Supplementary Table 3. Convergence test results according to Heidelberger and Welch criteria.

	Stationarity Test	C-von-M	Halfwidth Test	Mean	Halfwidth
Variance components ^A					
Total saturated fatty acid - SFA					
σ_a^2	passed	5.41E-02	passed	1.17E-02	2.71E-04
σ_c^2	passed	6.50E-02	passed	7.66E-03	2.36E-04
σ_e^2	passed	5.27E-02	passed	6.81E-02	2.45E-05
h^2	passed	0.0553	passed	0.1329	3.03E-03
Total unsaturated fatty acid - UFA					
σ_a^2	passed	2.14E-01	passed	1.72E-03	5.60E-05
σ_c^2	passed	2.94E-01	passed	2.19E-03	5.52E-05
σ_e^2	passed	5.72E-02	passed	3.55E-02	1.62E-05
h^2	passed	0.2179	passed	0.0435	1.42E-03
Monounsaturated fatty acid - MUFA					
σ_a^2	passed	0.0342	passed	1.94E-03	5.46E-05
σ_c^2	passed	0.0408	passed	1.49E-03	5.92E-05
σ_e^2	passed	0.1662	passed	2.67E-02	1.31E-05
h^2	passed	0.0340	passed	0.0643	1.80E-03
Polyunsaturated fatty acid - PUFA					
σ_a^2	passed	0.0399	passed	6.82E-05	1.72E-06
σ_c^2	passed	0.0338	passed	1.59E-04	1.51E-06
σ_e^2	passed	0.0593	passed	1.02E-03	3.47E-07
h^2	passed	0.0401	passed	5.48E-02	1.37E-03
Palmitic fatty acid - C16:0					
σ_a^2	passed	0.0663	passed	0.0022	4.88E-05
σ_c^2	passed	0.0779	passed	0.0018	4.06E-05
σ_e^2	passed	0.1866	passed	0.0141	4.94E-06
h^2	passed	0.0653	passed	0.1242	2.57E-03

Stearic fatty acid - C18:0					
σ_a^2	passed	0.0593	passed	0.0008	4.42E-05
σ_c^2	passed	0.0672	passed	0.0007	3.97E-05
σ_e^2	passed	0.0391	passed	0.0105	5.06E-06
h^2	passed	0.0589	passed	0.0836	4.18E-03
Oleic fatty acid - C18:1					
σ_a^2	passed	0.0867	passed	0.0010	5.16E-05
σ_c^2	passed	0.0769	passed	0.0011	4.81E-05
σ_e^2	passed	0.2615	passed	0.0192	1.03E-05
h^2	passed	0.0859	passed	0.0510	2.38E-03

σ_a^2 = direct additive genetic; σ_c^2 = animal permanent environment; σ_e^2 = residual variance; h^2 = heritability.