

Table S1. The effect of the main factors (type of mother – primiparous or multiparous), diet/treatment and offspring sex) and their interactions on histomorphometric parameters of the duodenum of male and female offspring born from primiparous and multiparous dams supplemented with HMB and/or AKG during the gestational period.

<b>P value for factors and interactions</b>	<b>Mother</b>	<b>Diet</b>	<b>Sex</b>	<b>Mother *Diet</b>	<b>Mother *Sex</b>	<b>Diet*Sex</b>	<b>Mother *Diet*Sex</b>	<b>C*HMB</b>	<b>C*AKG</b>	<b>C*HMB+AKG</b>	<b>HMB*AKG</b>	<b>HMB*HMB+AKG</b>	<b>AKG*HMB+AKG</b>
<b>Thickness of the mucosa (µm)</b>	0.228	0.235	0.146	0.000	0.000	0.000	0.018	0.726	0.977	0.770	0.470	0.186	0.944
<b>Thickness of the submucosa (µm)</b>	0.000	0.063	0.833	0.000	0.189	0.004	0.070	0.648	0.294	0.040	0.935	0.445	0.806
<b>Thickness of the inner muscle layer (µm)</b>	0.005	0.000	0.000	0.116	0.000	0.001	0.091	0.095	0.967	0.005	0.028	0.745	0.001
<b>Thickness of the outer muscle layer (µm)</b>	0.000	0.040	0.000	0.000	0.000	0.000	0.002	0.357	0.599	0.969	0.021	0.637	0.325
<b>Total thickness of muscularis (µm)</b>	0.000	0.025	0.000	0.000	0.000	0.000	0.003	0.218	0.733	0.795	0.017	0.747	0.209
<b>Muscle to mucosa ratio</b>	0.316	0.000	0.000	0.000	0.000	0.000	0.000	0.777	0.003	0.851	0.000	0.294	0.040
<b>Submucosa to mucosa ratio</b>	0.006	0.806	0.161	0.000	0.043	0.001	0.000	0.989	1.000	0.923	0.995	0.778	0.897
<b>Total number of crypts/mm</b>	0.900	0.142	0.045	0.004	0.343	0.977	0.002	0.319	0.135	0.841	0.969	0.815	0.543
<b>Number of open crypts/mm</b>	0.057	0.000	0.003	0.002	0.000	0.094	0.308	0.488	0.134	0.322	0.002	0.992	0.001

<b>Number of closed crypts/mm</b>	0.031	0.000	0.077	0.000	0.000	0.029	0.017	0.000	1.000	0.025	0.000	0.422	0.033
<b>Number of undamaged villi/mm</b>	0.000	0.005	0.867	0.122	0.312	0.003	0.015	0.021	1.000	0.101	0.027	0.937	0.122
<b>Number of damaged villi/mm</b>	0.000	0.004	0.000	0.010	0.000	0.000	0.016	0.218	0.003	0.015	0.433	0.711	0.971
<b>Total number of villi/mm</b>	0.000	0.001	0.050	0.006	0.036	0.006	0.024	0.004	0.521	0.001	0.181	0.987	0.087
<b>Number of crypts to villi/mm ratio</b>	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.000	0.018	0.002	0.133	0.427	0.917
<b>Number of enterocytes/mm</b>	0.001	0.005	0.062	0.000	0.060	0.001	0.982	0.992	0.964	0.016	0.870	0.006	0.062
<b>Number of Goblet cells/mm</b>	0.632	0.010	0.000	0.000	0.392	0.000	0.000	0.075	0.812	0.929	0.005	0.273	0.440
<b>Enterocytes to Goblet cells ratio</b>	0.186	0.025	0.010	0.000	0.828	0.000	0.039	0.055	0.997	0.978	0.031	0.142	0.930
<b>The height of enterocytes (μm)</b>	0.119	0.005	0.000	0.000	0.867	0.394	0.009	0.898	0.004	0.853	0.036	1.000	0.049
<b>Villi height (μm)</b>	0.016	0.000	0.108	0.001	0.019	0.000	0.000	0.000	0.940	0.873	0.001	0.003	0.998
<b>Villi width (μm)</b>	0.241	0.461	0.103	0.000	0.260	0.307	0.074	0.397	0.717	0.891	0.956	0.829	0.986
<b>Crypts width (μm)</b>	0.481	0.011	0.001	0.001	0.244	0.750	0.050	0.092	0.934	0.306	0.018	0.935	0.092

<b>Crypts depth (<math>\mu\text{m}</math>)</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.092	0.000	0.007
<b>Villus/crypt ratio</b>	0.000	0.000	0.000	0.000	0.000	0.101	0.000	0.000	0.000	0.236	0.007	0.085	0.738	0.538
<b>Absorption surface [<math>\mu\text{m}^2</math>]</b>	0.050	0.000	0.374	0.046	0.393	0.000	0.000	0.000	0.000	0.375	0.316	0.017	0.024	1.000

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C, control group; HMB,  $\beta$ -Hydroxy- $\beta$ -methylbutyrate at a daily dose of 0.02 g/kg of body weight; AKG, alpha-ketoglutaric acid at a daily dose of 0.4 g/kg of body weight; N = 12 in each group; significance level at  $\alpha < 0.05$

Table S2. The effect of the main factors (type of mother – primiparous or multiparous), diet/treatment and offspring sex) and their interactions on histomorphometric parameters of the jejunum of male and female offspring born from primiparous and multiparous dams supplemented with HMB and/or AKG during the gestational period.

<b>P value for factors and interactions</b>	<b>Mother</b>	<b>Diet</b>	<b>Sex</b>	<b>Mother *Diet</b>	<b>Mother *Sex</b>	<b>Diet*Sex</b>	<b>Mother *Diet*Sex</b>	<b>C*HMB</b>	<b>C*AKG</b>	<b>C*HMB+AKG</b>	<b>HMB*AKG</b>	<b>HMB*HMB+AKG</b>	<b>AKG*HMB+AKG</b>
<b>Thickness of the mucosa (µm)</b>	0.136	0.000	0.000	0.000	0.586	0.038	0.018	0.546	0.012	0.050	0.303	0.001	0.000
<b>Thickness of the submucosa (µm)</b>	0.008	0.000	0.660	0.418	0.153	0.427	0.000	0.012	0.221	0.476	0.000	0.372	0.004
<b>Thickness of the inner muscle layer (µm)</b>	0.194	0.000	0.077	0.131	0.000	0.000	0.000	0.007	1.000	0.000	0.007	0.011	0.000
<b>Thickness of the outer muscle layer (µm)</b>	0.011	0.001	0.844	0.010	0.698	0.000	0.891	0.659	0.050	0.715	0.001	1.000	0.002
<b>Total thickness of muscularis (µm)</b>	0.003	0.000	0.193	0.001	0.075	0.000	0.075	0.045	0.430	0.005	0.000	0.901	0.000
<b>Muscle to mucosa ratio</b>	0.040	0.016	0.012	0.014	0.198	0.000	0.888	0.147	0.768	0.729	0.011	0.699	0.187
<b>Submucosa to mucosa ratio</b>	0.000	0.000	0.066	0.001	0.639	0.697	0.001	0.016	0.820	0.530	0.001	0.000	0.963
<b>Total number of crypts/mm</b>	0.082	0.004	0.279	0.467	0.583	0.833	0.000	0.777	0.295	0.002	0.852	0.040	0.250
<b>Number of open crypts/mm</b>	0.000	0.000	0.011	0.129	0.006	0.044	0.563	0.009	0.000	0.012	0.150	1.000	0.123

<b>Number of closed crypts/mm</b>	0.811	0.002	0.965	0.589	0.162	0.049	0.000	0.165	0.297	0.561	0.990	0.004	0.012
<b>Number of undamaged villi/mm</b>	0.570	0.870	0.662	0.757	0.554	0.666	0.010	1.000	0.901	0.998	0.870	0.994	0.959
<b>Number of damaged villi/mm</b>	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.014	0.047	0.001	0.701
<b>Total number of villi/mm</b>	0.000	0.005	0.020	0.283	0.013	0.000	0.000	0.003	0.043	0.430	0.848	0.216	0.681
<b>Number of crypts to villi/mm ratio</b>	0.000	0.000	0.001	0.211	0.005	0.008	0.002	0.002	0.000	0.000	0.907	0.307	0.716
<b>Number of enterocytes/mm</b>	0.028	0.004	0.353	0.003	0.000	0.000	0.000	0.533	0.120	0.653	0.002	0.059	0.718
<b>Number of Goblet cells/mm</b>	0.260	0.001	0.689	0.240	0.553	0.012	0.006	0.003	1.000	0.130	0.002	0.555	0.116
<b>Enterocytes to Goblet cells ratio</b>	0.006	0.008	0.358	0.028	0.000	0.188	0.000	0.004	0.712	0.280	0.088	0.365	0.888
<b>The height of enterocytes (μm)</b>	0.339	0.056	0.042	0.000	0.200	0.443	0.001	0.974	0.610	0.049	0.855	0.138	0.531
<b>Villi height (μm)</b>	0.540	0.000	0.000	0.000	0.373	0.249	0.022	0.000	0.000	0.442	0.998	0.000	0.000
<b>Villi width (μm)</b>	0.000	0.000	0.000	0.010	0.002	0.000	0.000	0.007	0.000	0.251	0.393	0.513	0.017
<b>Crypts width (μm)</b>	0.546	0.000	0.005	0.000	0.043	0.003	0.000	0.008	0.728	0.014	0.000	0.000	0.199

<b>Crypts depth (<math>\mu\text{m}</math>)</b>	0.000	0.000	0.652	0.000	0.954	0.000	0.000	0.148	0.067	0.306	0.000	0.981	0.000
<b>Villus/crypt ratio</b>	0.000	0.001	0.035	0.000	0.848	0.000	0.000	0.014	0.998	0.775	0.023	0.000	0.676
<b>Absorption surface (<math>\mu\text{m}^2</math>)</b>	0.760	0.000	0.000	0.000	0.309	0.007	0.000	0.002	0.000	0.003	0.174	0.999	0.133

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C, control group; HMB,  $\beta$ -Hydroxy- $\beta$ -methylbutyrate at a daily dose of 0.02 g/kg of body weight; AKG, alpha-ketoglutaric acid at a daily dose of 0.4 g/kg of body weight; N = 12 in each group; significance level at  $\alpha < 0.05$

Table S3. The effect of the main factors (type of mother – primiparous or multiparous), diet/treatment and offspring sex) and their interactions on histomorphometric parameters of the ileum of male and female offspring born from primiparous and multiparous dams supplemented with HMB and/or AKG during the gestational period.

<b>P value for factors and interactions</b>	<b>Mother</b>	<b>Diet</b>	<b>Sex</b>	<b>Mother *Diet</b>	<b>Mother *Sex</b>	<b>Diet*Sex</b>	<b>Mother *Diet*Sex</b>	<b>C*HMB</b>	<b>C*AKG</b>	<b>C*HMB+AKG</b>	<b>HMB*AKG</b>	<b>HMB*HMB+AKG</b>	<b>AKG*HMB+AKG</b>
<b>Thickness of the mucosa (µm)</b>	0.046	0.000	0.880	0.003	0.345	0.280	0.136	0.000	0.000	0.001	0.612	0.246	0.921
<b>Thickness of the submucosa (µm)</b>	0.000	0.000	0.058	0.002	0.651	0.029	0.006	0.000	0.310	0.002	0.051	0.909	0.231
<b>Thickness of the inner muscle layer (µm)</b>	0.001	0.000	0.516	0.038	0.000	0.000	0.036	0.040	0.019	0.496	0.000	0.000	0.439
<b>Thickness of the outer muscle layer (µm)</b>	0.044	0.000	0.879	0.000	0.067	0.002	0.042	0.001	0.994	0.952	0.000	0.006	0.862
<b>Total thickness of muscularis (µm)</b>	0.001	0.000	0.887	0.000	0.006	0.000	0.319	0.000	0.925	1.000	0.000	0.001	0.907
<b>Muscle to mucosa ratio</b>	0.000	0.002	0.622	0.012	0.046	0.000	0.012	0.957	0.004	0.063	0.020	0.199	0.789
<b>Submucosa to mucosa ratio</b>	0.000	0.000	0.491	0.000	0.275	0.001	0.001	0.000	0.005	0.000	0.012	0.841	0.116
<b>Total number of crypts/mm</b>	0.000	0.000	0.963	0.251	0.443	0.412	0.020	0.000	0.001	0.019	0.732	0.176	0.747
<b>Number of open crypts/mm</b>	0.000	0.000	0.186	0.000	0.003	0.057	0.000	0.000	0.021	0.000	0.049	0.883	0.254

<b>Number of closed crypts/mm</b>	0.457	0.022	0.060	0.000	0.012	0.215	0.013	0.828	0.980	0.059	0.599	0.351	0.020
<b>Number of undamaged villi/mm</b>	0.001	0.000	0.827	0.017	0.002	0.006	0.001	0.000	0.010	0.000	0.070	0.453	0.769
<b>Number of damaged villi/mm</b>	0.000	0.000	0.863	0.000	0.006	0.001	0.157	0.000	0.000	0.000	0.000	0.014	0.283
<b>Total number of villi/mm</b>	0.000	0.000	0.803	0.000	0.000	0.260	0.002	0.000	0.000	0.000	0.002	0.085	0.569
<b>Number of crypts to villi/mm ratio</b>	0.000	0.000	0.121	0.002	0.000	0.197	0.143	0.000	0.464	0.000	0.000	0.082	0.025
<b>Number of enterocytes/mm</b>	0.029	0.000	0.564	0.000	0.000	0.005	0.000	0.014	0.709	0.000	0.000	0.288	0.000
<b>Number of Goblet cells/mm</b>	0.417	0.000	0.859	0.017	0.073	0.000	0.223	0.002	0.010	0.562	0.949	0.000	0.000
<b>Enterocytes to Goblet cells ratio</b>	0.000	0.003	0.138	0.004	0.000	0.000	0.000	0.001	0.585	0.421	0.067	0.125	0.994
<b>The height of enterocytes (µm)</b>	0.166	0.722	0.501	0.017	0.123	0.108	0.027	0.868	0.841	1.000	1.000	0.854	0.826
<b>Villi height (µm)</b>	0.007	0.000	0.558	0.531	0.114	0.000	0.004	0.266	0.000	0.032	0.040	0.795	0.305
<b>Villi width (µm)</b>	0.302	0.008	0.186	0.000	0.119	0.000	0.000	0.534	0.869	0.068	0.149	0.688	0.007



<b>Crypts width (<math>\mu\text{m}</math>)</b>	0.000	0.000	0.049	0.034	0.000	0.001	0.003	0.000	0.861	0.910	0.002	0.000	0.468
<b>Crypts depth (<math>\mu\text{m}</math>)</b>	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.054	0.000	0.000	0.088	0.000
<b>Villus/crypt ratio</b>	0.000	0.000	0.118	0.000	0.001	0.017	0.109	0.000	0.023	0.000	0.000	0.990	0.001
<b>Absorption surface [<math>\mu\text{m}^2</math>]</b>	0.428	0.000	0.611	0.070	0.506	0.000	0.030	0.996	0.000	0.020	0.001	0.038	0.628

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C, control group; HMB,  $\beta$ -Hydroxy- $\beta$ -methylbutyrate at a daily dose of 0.02 g/kg of body weight; AKG, alpha-ketoglutaric acid at a daily dose of 0.4 g/kg of body weight; N = 12 in each group; significance level at  $\alpha < 0.05$



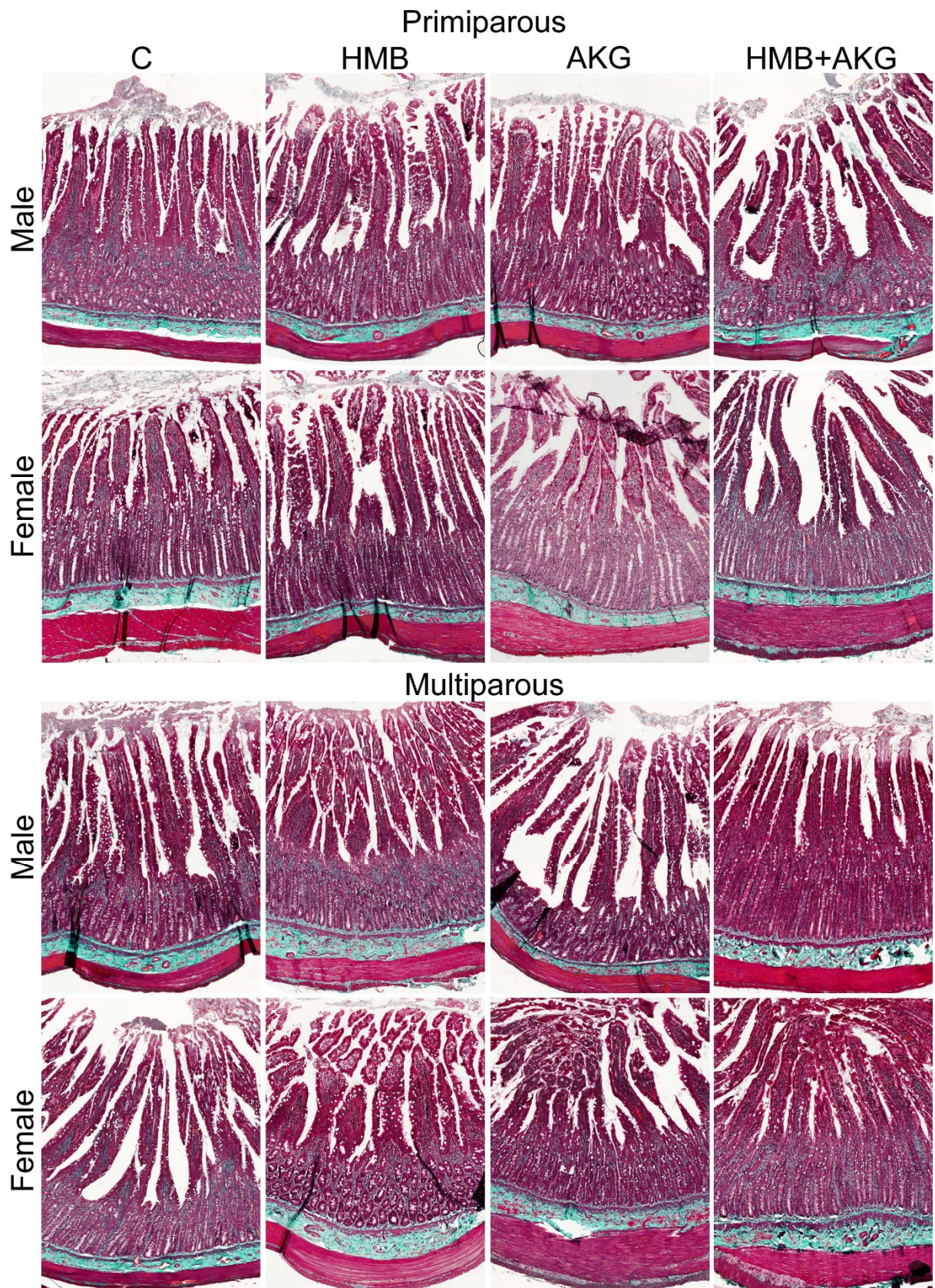


Figure 1S. A summary of Goldners trichrome staining images representative for jejunum. C, control group; HMB,  $\beta$ -Hydroxy- $\beta$ -methylbutyrate at a daily dose of 0.02 g/kg of body weight; AKG, alpha-ketoglutaric acid at a daily dose of 0.4 g/kg of body weight; N = 12 in each group. Magnification x100.