

Nucleotides in Sows Colostrum and Milk at Different Stages of Lactation

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ABSTRACT: An experiment was conducted with the objective of measuring the concentrations of CP and 5' monophosphate nucleotides (i.e., 5'AMP, 5'CMP, 5'GMP, 5'IMP, and 5'UMP) in sows' colostrum and milk. Twelve multiparity sows (Landrace x Yorkshire x Duroc) were used in the experiment. Litter size was standardized at 11 piglets for all sows on the day of farrowing. Sows were fed an 18% CP corn-soybean meal diet throughout lactation. The experimental period comprised the initial 28 d of lactation with colostrum being collected within 12 h of farrowing and milk being collected on d 3, 7, 14, 21, and 28. Milk samples were analyzed for CP and 5'AMP, 5'CMP, 5'GMP, 5'IMP, and 5'UMP. The CP linearly decreased ($P < 0.01$) from 16.6% in colostrum to 7.7, 6.2, 5.5, 5.7, and 6.3% in milk collected on d 3, 7, 14, 21, and 28, respectively. The concentrations of 5' AMP, 5'CMP, 5'GMP, and 5'IMP increased from d 0 to d 3 and d 7 and then decreased during the remaining lactation period (cubic effect, $P < 0.05$). The concentration of 5'UMP decreased linearly ($P < 0.01$) from d 0 to d 28 of lactation. In colostrum, 5'UMP represented 98% of all 5' monophosphate nucleotides and in milk, 5'UMP accounted for 86-90% of all nucleotides, regardless of d of lactation.

Item	Day of lactation						<i>P-values</i>		
	0	3	7	14	21	28	Linear	Quadratic	Cubic
CP	16.6	7.8	6.2	5.5	5.7	6.3	< 0.0001	< 0.0001	< 0.0001
5'AMP	4.0	11.3	12.8	6.8	4.3	3.0	0.0181	0.0435	0.0152
5'CMP	1.5	7.2	7.1	3.5	2.3	2.5	0.1245	0.1312	0.0041
5'GMP	5.4	14.7	14.0	10.2	6.0	7.1	0.0818	0.0675	0.0024
5'IMP	1.1	1.8	2.6	1.4	0.9	0.4	0.0217	0.0526	0.0439
5'UMP	555.6	305.5	263.1	144.0	122.8	104.0	< 0.0001	< 0.0001	0.0002

The results of this experiment indicate that the concentration of 5' monophosphate nucleotides in sows milk decline as lactation advances. In addition, 5' UMP is the most abundant nucleotide in colostrum and milk from lactating sows.

Key Words: Nucleotides, Sow, Milk, Colostrum