

# Effect Of Post-Ruminal Supply Of Amino Acids On Feed Intake And Milk Production Of Lactating Dairy Cows

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Amino acids (AA), or building blocks of protein, have been divided into two categories, essential (EAA) and non-essential (NEAA). Despite this categorization, both types of AA are required for the synthesis of milk protein, but the EAA cannot be synthesized by the cow and must be supplied, while the NEAA can be synthesized by the cow in several organs including the mammary gland. The objective of this experiment was to determine if NEAA synthesis is a limiting step for milk protein synthesis. Eight lactating cows, 4 primiparous and 4 multiparous, were used in a replicated 4x4 Latin square. The cows were fed a diet that met their energy requirements but only 75% of their metabolizable protein requirements. The four treatments were 14-d abomasal infusions of: 1) water (control), 2) EAA (290 g/d), 3) NEAA (330 g/d) and 4) EAA + NEAA (620 g/d), with the casein profile.

Dry matter intake (16.6 kg/d), milk fat content (2.88%) and milk fat yield (1.02 kg/d) were not different between treatments. In contrast, milk yield, and milk lactose and protein yield were affected by treatment. Milk yield was higher for the EAA (37.1 kg/d) and EAA+NEAA (37.9 kg/d) treatments than for the control (34.0 kg/d) and NEAA (34.4 kg/d) treatments. Similarly, milk protein content and protein yield were higher for the EAA (2.97%, 1.10 kg/d) and EAA+NEAA (3.03%, 1.15 kg/d) treatments than for the control (2.83%, 0.97 kg/d) and NEAA (2.81%, 0.97 kg/d) treatments. Milk lactose content was higher for the NEAA and control treatments than for the EAA+NEAA and EAA treatments (4.69, 4.65, 4.60 and 4.55%, respectively), but lactose yield was higher with the EAA and EAA+NEAA treatments than with the control and NEAA treatments.

**Take Home Message:** Yields of milk, protein and lactose were higher for cows receiving the EAA or EAA+NEAA than for cows receiving the control or NEAA treatments. These results indicate that NEAA supplementation is not beneficial, at least on a 14 d-period, suggesting that NEAA synthesis does not limit milk protein secretion.