

P463 Validation that the plasma AA dose-response technique can differentiate the methionine bioavailability of 2 rumen-protected encapsulated supplements of similar coating composition.

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The plasma free-AA dose-response technique has been established with the proper replication to determine methionine (Met) bioavailability within ± 3 to 5% points. Our objective was to measure the relative Met bioavailability of 2 protected sources of methionine (75% Met) with similar coating chemical composition but produced using different industrial processes. Six multiparous Holstein cows fed a Lys adequate (6.22% MP), Met deficient (1.74% of MP) diet were used in a replicated 3 \times 3 Latin square with 7 d experimental periods. The 3 treatments were: 1) Control (CON), 2) CON plus 24 g/d Met from SmartamineM (SMM; Adisseo), and 3) CON plus 24 g/d Met from Kessent M (KEM; Kemin Industries, Inc.). The 2 RP-Met products were fed in 3 daily aliquots at 0500, 1300, and 2100 h. Intake, milk yield and components were collected the last 3 d of each period. Blood was collected from the tail vein the last 3 d of each period at 2, 4, 6 and 8 h after the morning feeding (0500 h). Data were analyzed using the PROC MIXED to generate means and REG procedures of SAS to generate the linear regression variables. Significance was declared at $P \leq 0.05$. Average milk yield was 43.1 kg/d and DMI was 25.7 kg/d. Plasma Met, Cystathionine, Tau, and total sulfur AA (TSAA) concentrations (μM) were higher for cows fed SMM compared with CON or KEM with KEM being greater than CON. Cystine was also higher for SMM and KEM compared with CON. Slope analysis confirmed the relative bioavailability of Met in KEM was 86.0% + 3.0 (0.06794/0.07903) relative to SMM. The plasma free-AA dose-response technique confirmed its robustness to differentiate the bioavailability of rumen-protected methionine products.

Table 1. Plasma AA concentrations (μM) for cows fed RP-Met supplements

Item	Control	KEM	SMM	SEM	<i>P</i> -value
Methionine	23.1 ^c	46.0 ^b	50.5 ^a	2.13	<0.001
Cystine	20.8 ^b	22.0 ^a	21.9 ^a	0.42	0.04
Cystathionine	1.79 ^c	2.55 ^b	2.68 ^a	0.06	<0.0001
Homocysteine	2.77	2.46	2.74	0.23	0.38
Taurine	42.0 ^c	49.4 ^b	52.2 ^a	1.20	0.003
TSAA	90.4 ^c	122.6 ^b	130.3 ^a	3.4	<0.001
Slope for TSAA, %TAA – TSAA	—	0.06794 ^b	0.07903 ^a	0.0024	<0.001

^{a-c}Means within rows differ at $P < 0.05$.

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