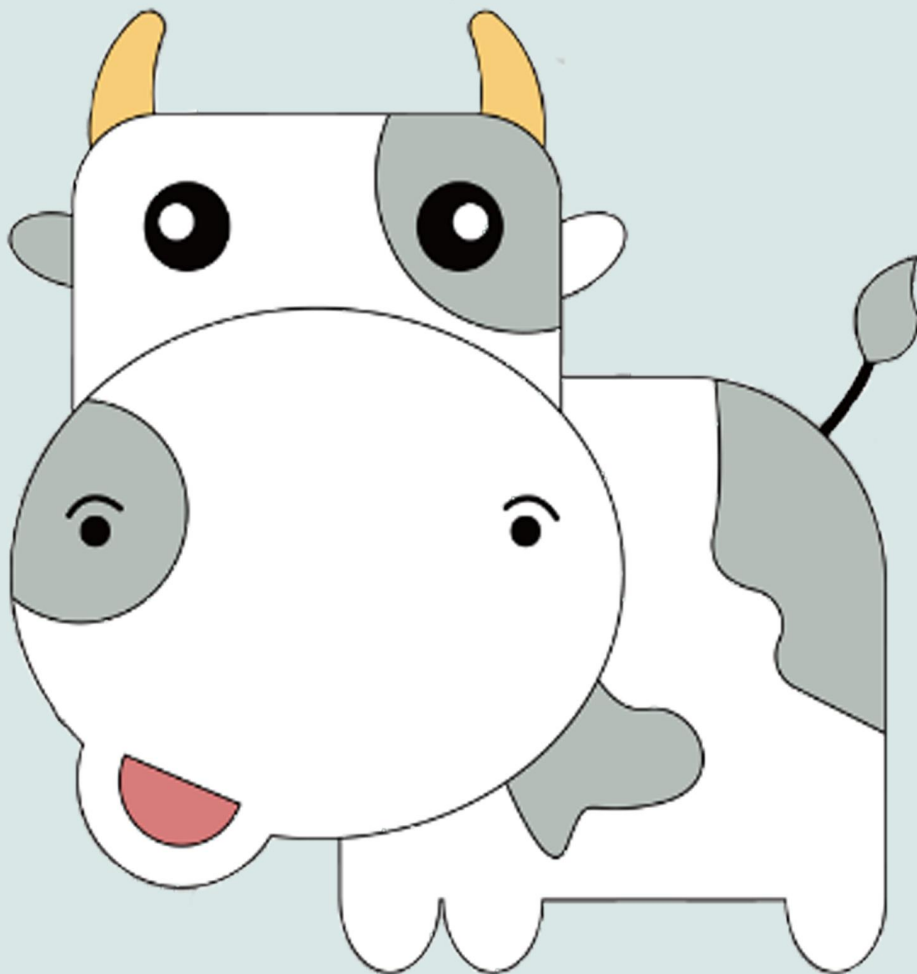


Ruminant Ranch | | Application Cases of Rumen-passing Amino Acids

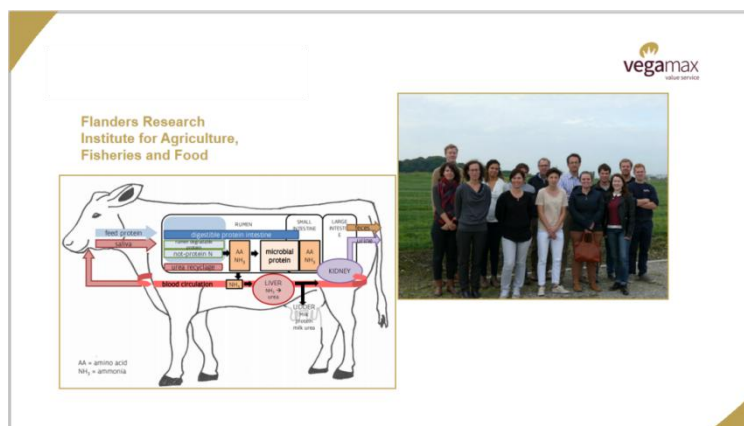


Ruminant Ranch | | Application Cases of Rumen-passing Amino Acids

Methionine and lysine are the first or second restrictive amino acids in lactating cows, which affect the nutrition supply and lactation performance of protein in dairy cows. However, due to the degradation of amino acids in the diet by rumen microorganisms of dairy cows, it is difficult to control the level of restrictive amino acids reaching the small intestine by adding amino acids directly to the diet of dairy cows. Therefore, how to make methionine reach the small intestine and be absorbed and utilized is of great significance to the utilization of dietary protein and the improvement of milk protein content.

Vegamax uses special coating materials to treat methionine and lysine. It is protected from microbial degradation in rumen of dairy cows, passes through rumen in the form of encapsulated microcapsules, and is released and absorbed in stomach and small intestine. Regulate the level of restrictive amino acids reaching the small intestine, so as to improve the production performance of dairy cows and increase the benefits of farmers.

Today, we will share with you a case about the application of rumen-bypass amino acids in dairy cows fed with low protein diet. The application results showed that the addition of rumen-bypass methionine and lysine could significantly increase the yield of dairy cows fed with low protein diet.



1 Application situation

1.1 Time and place: The experimental period is 30 days, and the experimental place is in a dairy farm.

1.2 Executive body: Flanders Research Institute for Agriculture, Fisheries and Food , ILVO. ILVO is an independent government research institution, which belongs to the agricultural and fishery policy area of Flander government. ILVO's mission is to implement and coordinate scientific research and related public services that support policies, aiming at creating sustainable agriculture and fisheries from the economic, ecological and social perspectives.

1.3 Materials: VegaMet: 60% DL-methionine; SmartLys: 60% L-Lysine hydrochloride. Provided by Zhejiang Wanfang Biotechnology Co., Ltd.

1.4 Animals: 36 Holstein cows with similar weight, lactation days and good condition were randomly divided into three groups. See table 1 for experimental design.

Table 1 Test design

Group	Treatment
Control	Basal diet
Test 1	Low protein diet
Test 2	Low protein diet+SmartLys+VegaMet

2 Result

2.1 Effect of Amino Acids on Feed Intake of Dairy Cows

See Table 2 for statistics of the influence of amino acids added to low protein diet on milk yield of dairy cows.

Table 2 Effect of Amino Acids on Feed Intake of Dairy Cows

	Control	Test 1	Test 2	P Value
Dry matter intake (kg/day)	21.74 ^a ±0.35	21.09 ^b ±0.35	21.50 ^a ±0.35	<0.001
Roughage intake (kg/day)	15.43±0.33	15.40±0.33	15.61±0.33	0.26
Concentrated feed intake (kg/day)	6.31 ^a ±0.21	5.68 ^b ±0.21	5.89 ^c ±0.21	<0.001
Crude protein intake (kg/day)	3.70 ^a ±0.07	3.21 ^b ±0.07	3.30 ^c ±0.07	<0.001

Note: the test data are expressed by mean standard ± deviation

It can be seen from Table 2 that the dry matter intake of dairy cows in Test Group 2 increased by 0.41kg/d, concentrated feed intake increased by 0.21kg/d and crude protein intake increased by 0.09kg/d compared with that in Test Group 1. Therefore, adding appropriate amount of methionine and lysine to low protein feed can effectively increase dry matter intake of dairy cows.

2.2 Effect of Adding Amino Acids on Performance of Dairy Cows

See Table 3 for statistics of the effects of amino acids added in low protein diet on the performance of dairy cows.

Table 3 Effect of adding amino acids on performance of dairy cows

	Control	Test 1	Test 2	P Value
Milk yield (kg/day)	28.97 ^a ±0.69	28.22 ^b ±0.69	28.75 ^a ±0.69	< 0.001
Butterfat (%)	4.56±0.09	4.54±0.09	4.58±0.09	0.75
Butterfat (g/day)	1299.00 ^a ±32.03	1252.66 ^b ±31.95	1293.98 ^a ±31.95	0.01
Lactoprotein (%)	3.66 ^a ±0.05	3.68 ^a ±0.05	3.71 ^b ±0.05	0.03
Lactoprotein (g/day)	1043.23 ^a ±21.80	1014.68 ^b ±21.77	1049.16 ^a ±21.77	< 0.001
Lactose (%)	4.54 ^a ±0.02	4.55 ^{ab} ±0.02	4.57 ^b ±0.02	0.01
Nitrogen utilization efficiency	27.45 ^a ±0.32	30.79 ^b ±0.32	30.88 ^b ±0.32	< 0.001
Weight (kg/week)	-0.57	+1.32	+1.06	0.31

Note: the test data are expressed by mean standard ± deviation

It can be seen from table 3 that the milk yield, milk fat content and milk protein of experimental group 2 increased by 0.53kg/d, 41.32g/d and 34.48g/d respectively compared with experimental group 1. Compared with the control group, the nitrogen metabolism efficiency of experimental group 2 increased by 12.50%. Therefore, adding appropriate amount of methionine and lysine to low protein feed can effectively improve the performance of dairy cows.

3 Conclusion

The application results showed that the addition of rumen-bypass methionine and lysine had obvious effect on the yield of dairy cows fed with low protein diet. Adding appropriate amount of rumen-bypass methionine and lysine to low-protein diet can effectively improve milk yield of dairy cows, increase milk protein and milk fat content, effectively improve milk protein rate and milk fat rate, and improve nitrogen utilization efficiency of dairy cows.



Rumen-bypass methionine and rumen-bypass lysine mentioned in this paper are microencapsulated products—VegaMet and SmartLys made by Vegamax by coating DL-methionine and L-lysine hydrochloride with special coating materials with scientific preparation technology and brand-new biotechnology.

* The advertising materials, data and conclusions related to product performance contained in this publicity do not constitute assertions and guarantees on the efficacy and safety of related product

VEGA ZHEJIANG VEGA BIO-TECHNOLOGY CO.,LTD

Add: Xiaoshu Industrial Estate, Meixi Town, Anji City, Zhejiang Province, China

TEL: +86-571-88398112 FAX: +86-571-88398113

technologies, and may change due to different use environments and conditions. Please contact Huijia

Product Manager for details.