ENTERIC METHANE MITIGATION IN CATTLE BY USING TRADILIN®

Solveig Mendowski[1*], Vincent Chatellier[1] and Guillaume Chesneau[1]

[1]Valorex, La Messayais, France

*Corresponding author email: s.mendowski@valorex.com

I. INTRODUCTION

Agricultural methane (CH_4) emissions have to be reduced, because they represent 32% of global CH_4 emissions [1]. Among the solutions available to reduce these emissions, adding omega-3 fatty acids in cattle diets is a natural and well-known solution. Tradilin® is a range of products composed of selected linseed with high content of linolenic acid (220 g/kg of Tradilin® with 100% linseed) and processed under specific conditions. The aim of this study is to quantify the expected CH_4 reduction obtained with Tradilin® included in cattle diets.

II. MATERIALS AND METHODS

A meta-analysis was performed thanks to 11 publications (Table 1), representing 25 treatments using Tradilin® as a CH_4 mitigation strategy in cattle diets. Considering a standardized Tradilin® product with 100% linseed, two linear regressions between the amount of Tradilin® in diet and measured CH_4 emissions (in g/d or in g/kg dry matter intake) were established.

Table 1. Publications included in the meta-analysis

Publication	Country of trial	Animal used	Main forage in diet	CH_4 measurement
2	France	Holstein cows	Corn silage	SF_6
3	France	Charolais bulls	Barley straw	SF_6
4	France	Holstein cows	Grass silage / Pasture	SF_6
5	The Netherlands	Holstein-Friesian cows	Grass silage	Respiration chambers
6	Great Britain	Holstein-Friesian cows	Corn silage / Grass silage	Respiration chambers
7	Great Britain	Holstein-Friesian heifers	Corn silage / Grass silage	Respiration chambers
8	France	Holstein cows	Corn silage / Grass hay	SF_6
9	Korea	Holstein steers	Grass hay	Respiration chambers
10	Germany	Holstein cows	Corn silage / Grass silage	Respiration chambers
11	Great Britain	Holstein-Friesian cows	Corn silage	Respiration chambers
12	Switzerland	Brown Suiss / Suiss Fleckvieh cows	Grass silage	Respiration chambers / SF_6

III. RESULTS AND DISCUSSION

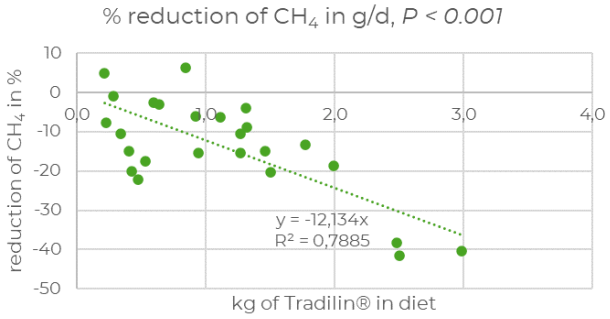

Figure 1. Linear regression of methane emission reduction with increasing amounts of Tradilin® in diets

The regressions between amount of Tradilin® and decrease of CH_4 emission were forced to go through the intercept to integrate small amount of Tradilin®. Indeed, range of doses of Tradilin® were up to 3,000 g/d/animal, which is higher to what is commonly done in farms. Measuring CH_4 (respiration chambers and SF_6 devices) is expensive, thus in scientific trials only few animals given high doses to ensure significant results are used. The regressions show that when 1 kg of Tradilin® is added in cattle diets (on a DM basis), the expected reductions of CH_4 emissions are 12.1% (Figure 1) and 9.4% for CH_4 expressed in g/d and in g/kg dry matter intake, respectively. Both regressions were highly significant ($P < 0.001$).

IV. CONCLUSION

Tradilin® can be used in cattle diets as a CH_4 mitigation strategy, as 1 kg/d/animal reduced CH_4 by up to 12%, among other zootechnical benefits of this product.

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