Ruminal function influenced by diet parameters in dairy herds with milk fat drop syndrome (MFDS) in Belgium

Knapp E.[1,2], Sartelet A.[2], Malniece A.[2], Guyot H.[2]

1. Quartes, Deinze, Belgium.

2. Sustainable Livestock Production, FARAH & Faculty of Veterinary Medicine, ULiège, Liège, Belgium.

contact: emilie.knapp@quartes.com

INTRODUCTION

MFDS is usually attributed in cattle herds with acidosis risks and/or maize based diet associated to shift in the rumen. It could also happen when the rumen fails to produce enough acetic acid.

In Belgium, the MFDS is also present in grass based diets and if fibers exceed largely international standards.

The objectives of this study is to compare ruminal functions with diet quality and risks of MFDS.

Fig. 1

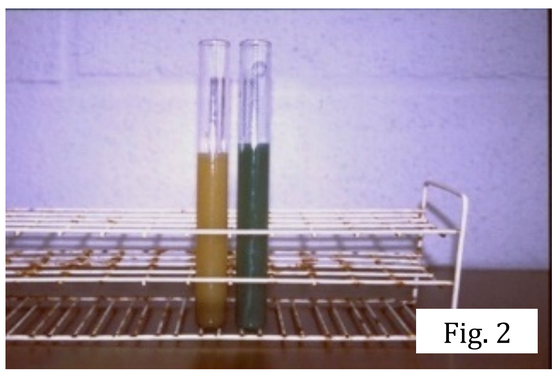

Fig. 2

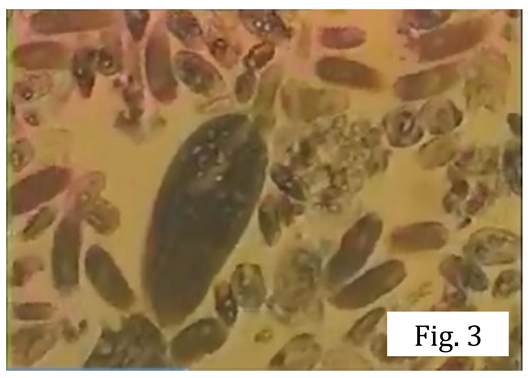

Fig. 3

MATERIELS AND METHODS

233 cows between 50-200 days in milk in 38 dairy farms with MFDS. Samples were collected on each cow and analyzed on site :

- ✓ Health scores (1 to 5 scale)
- ✓ Rumen juice with an oral probe (Flora©) (Fig.1) :
  - ➢ measure of ruminal pH.
  - ➢ redox evaluation by methylene blue test (Fig. 2).
  - ➢ observation of protozoa (Fig. 3).
- ✓ Individual diet was evaluated and milk parameters were provided by milk control or AMS data.

RESULTS : production = 30.5 kg milk/d 188 DIM

- ✓ Average fat in milk : 3.6 ± 0,58
- ✓ Average pH : 6.5 ± 0.53
- ✓ Mean cellulose : 184.7 ± 21.9 g/kg of dry matter (DM)
- ✓ Average NDF : 394.9 ± 35.6 g/kg DM and starch was 177.7 ± 44.5 g/kg DM.

LOW RISK ON LACK OF FIBERS

NO CORRELATION BETWEEN pH and FAT (Fig. 4)

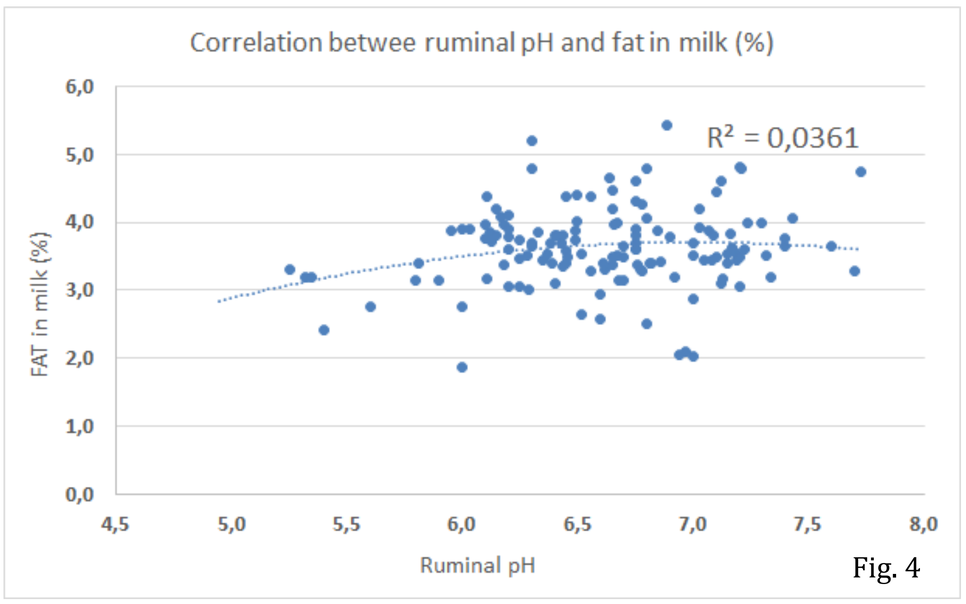

Fig. 4

Farm with MFDS:

- ➢ **only 4,7% of acidosis BUT 21% of alkalosis**
- ➢ **14.1% of slow ruminal activity was observed**

RESULTS

- ✓ Significant linear correlations between ruminal pH and diet cellulose (r=0,36, P< 0,001)
- ✓ The other significant correlations were quadratic (P<0.001).

The better model explaining (50.8%) the pH variation is:

pH = NDF, sugars, proteins and bypass starch

	OR	P< F
Alkalosis		
Slow ruminal activity (redox > 4 min)	**1.8**	**0.03**
By-pass starch > 1.2 kg/d	**6.2**	**0.02**
Slow ruminal activity		
Cellulose > 190 g/kg DM	**2.9**	**0.02**
Cellulose > 190 g/kg DM and sugars < 5% of DM	**3.5**	**0.02**

CONCLUSION

Links with MFDS are complex so adding bicarbonate has to be thoughtful.

Measurement of the ruminal pH only couldn't provide enough information to diagnose and to treat ruminal dysfunction.

To look at the management of the farm, diet, body condition score and all the ruminal activity parameters are needed to manage the MFDS