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## **Use of Quarter Milk or Composite Samples for Diagnosis of Subclinical Bovine Mastitis in Dairy Farms**

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Characterisation of pathogenic flora from composite milk (CM) samples of subclinical intramammary infected cows is frequently performed, instead of quarter milk (QM), in part due to economic reasons. One QM or CM samples are also used in cows with only one QM to positive California Mastitis Test (CMT). The aim of present work was to compare pathogenic flora between QM and CM samples from cows with one positive CMT quarter. Twenty Holstein-Friesian cows positive CMT in one quarter were randomized from 3 dairy farms. Both QM (positive CMT) and CM samples were collected in each cow. Somatic cell count (fossmatic) and microbiologic analysis (Plate Count Agar) were performed. *Staphylococcus aureus* were isolated in 35% (7/20), *Streptococcus uberis* in 20% (4/20) and *Streptococcus agalactiae* in 10% (2/20) of cows. Remained cows were affected by others contagious or environmental microorganisms, including fungi. Pathogenic flora was observed in QM but not in CM in 30% (6/20), in CM but not in QM in 5% (1/20) of cows, similar in 15% (3/20) and different in 50% (10/20;  $P < 0.01$ ) of both samples. Only 20% (2/10) of coupled samples with different flora had, at least, one similar microorganism. The number of somatic cells per ml was  $6.400 \times 10^3 \pm 1.342 \times 10^3$  in QM ( $n=20$ ) and  $245 \times 10^3 \pm 58 \times 10^3$  in CM ( $\pm$ S.E.M.,  $n=20$ ,  $P < 0.001$ ). The linear score was also higher in QM ( $7.8 \pm 0.4$ ,  $n=20$ ) than in CM ( $3.7 \pm 0.4$ ,  $n=20$ ,  $P < 0.001$ ). In the present study, neither one QM nor CM samples were sufficient to characterise the pathogenic flora of the udder from cows with one positive CMT quarter. This suggests the use of all QM in separate samples for more accurately epidemiological studies. Additionally, these results may justify some treatments failure and reinforce the importance of treatments others than the specific antibiotherapy in affected mastitic cows.

Key words: Mastitis, somatic cells, epidemiology, dairy cattle

# Use of Quarter Milk or Composite Samples for Diagnosis of Subclinical Bovine Mastitis in Dairy Farms



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## Introduction

Characterisation of pathogenic flora from composite milk (CM) samples of subclinical intramammary infected cows is frequently performed, instead of quarter milk (QM), in part due to economic reasons.

One QM or CM samples are also used in cows with only one QM to positive California Mastitis Test (CMT).

The aim of present work was to compare pathogenic flora between QM and CM samples from cows with one positive CMT quarter.

## Material and Method

Twenty Holstein-Friesian cows positive CMT in one quarter were randomized from 3 dairy farms.

Both QM (positive CMT) and CM samples were collected in each cow.

Somatic cell count (fossmatic 5000) and microbiologic analysis (Plate Count Agar; total bacteria colony count  $\geq 500$  UFC/ml) were performed.

## Results

### Microorganisms identified:

*Staphylococcus aureus* were isolated in 35% (7/20), *Streptococcus uberis* in 20% (4/20) and *Streptococcus agalactiae* in 10% (2/20) of cows.

Remained cows were affected by others contagious or environmental microorganisms, including fungi: *Aerococcus viridans*, *Enterococcus saccharolyticus*, *Lactococcus garvieae*, Coag. Neg. *Staphylococcus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Corynebacterium* spp. and others *Staphylococcus* spp., *Streptococcus* spp. or Enterobacteriaceae.

### QM versus CM abnormal flora:

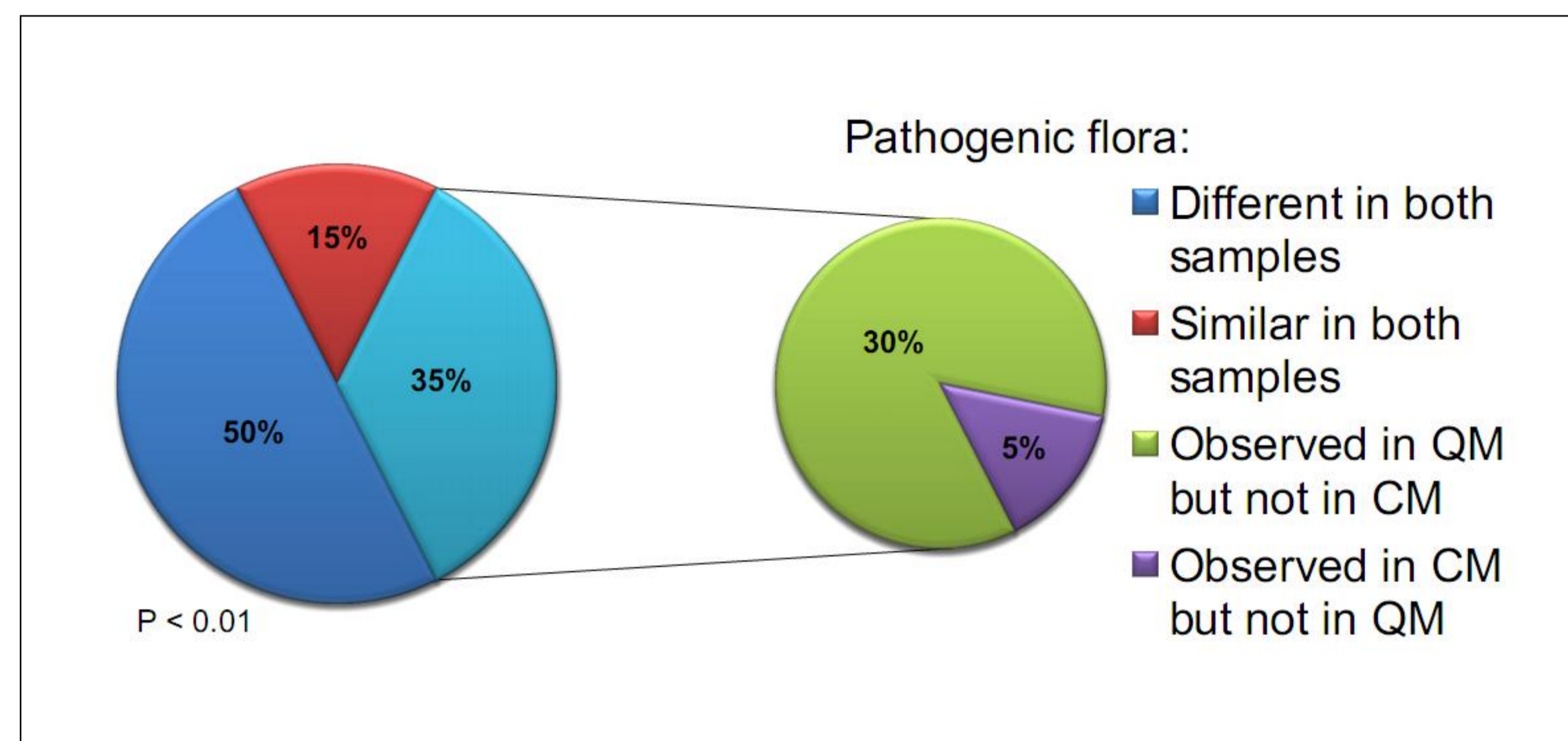
Pathogenic flora was observed in QM but not in CM in 30% (6/20), in CM but not in QM in 5% (1/20) of cows, similar in 15% (3/20) and different in 50% (10/20;  $P < 0.01$ ) of both samples (graphic1).

Only 20% (2/10) of coupled samples with different flora had, at least, one similar microorganism.

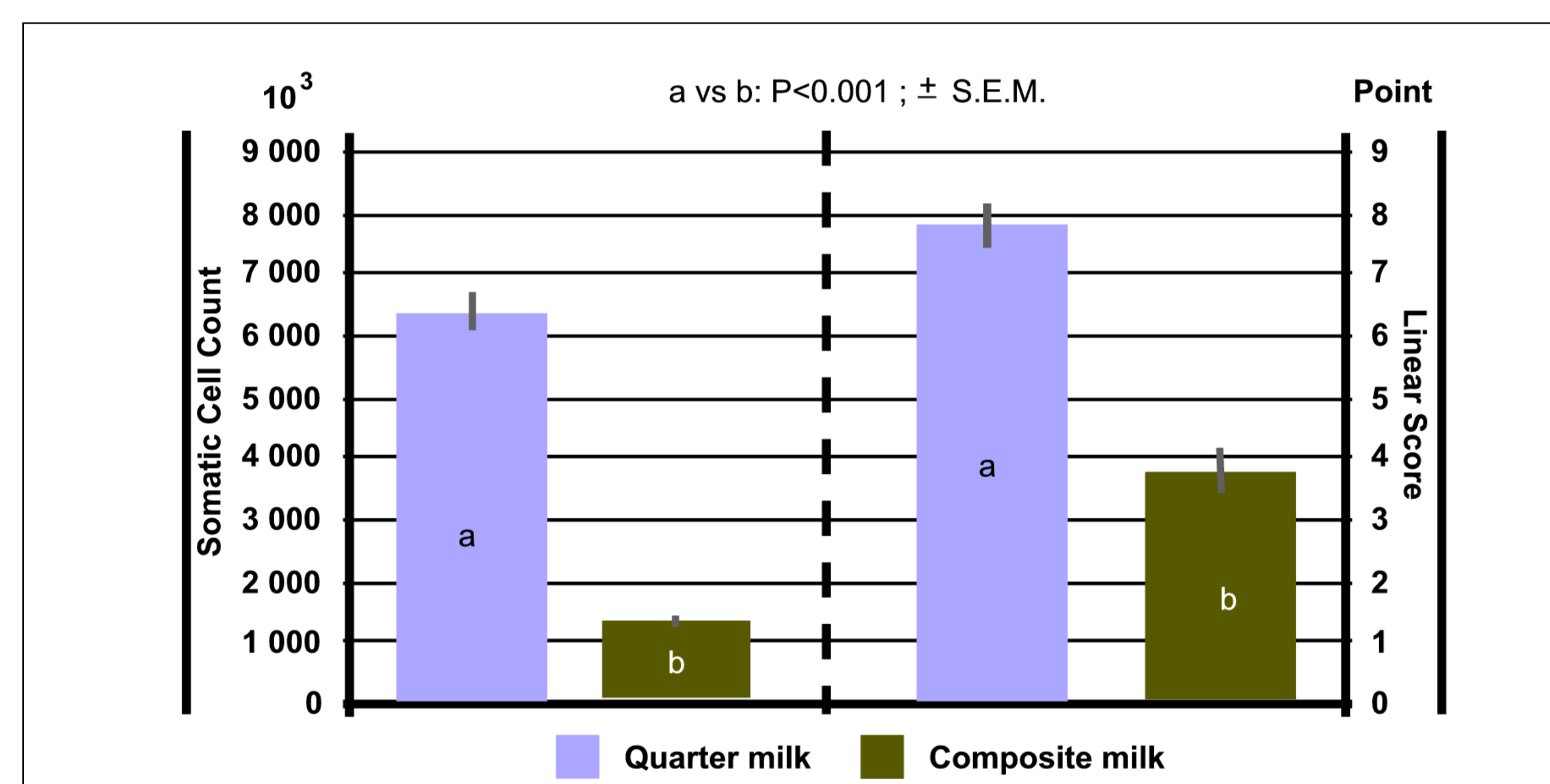
### Somatic cells

The number of somatic cells per ml was  $6.400 \times 10^3 \pm 1.342 \times 10^3$  in QM (n=20) and  $245 \times 10^3 \pm 58 \times 10^3$  in CM ( $\pm$ S.E.M., n=20,  $P < 0.001$ ).

The linear score was also higher in QM ( $7.8 \pm 0.4$ , n=20) than in CM ( $3.7 \pm 0.4$ , n=20,  $P < 0.001$ , graphic 2).



Graphic 1 - Comparison of pathogenic flora between quarter milk (QM) and composite milk (CM) from 20 cows.



Graphic 2 - Comparison of Somatic cell count / Linear score between quarter milk and composite milk.

## Conclusion

➤ Neither one QM nor CM samples were sufficient to characterise the pathogenic flora of the udder from cows with one positive CMT quarter.

➤ This suggests the use of all QM in separate samples for more accurately epidemiological studies.

➤ These results may justify some treatments failure and reinforce the importance of treatments others than the specific antibiotherapy in affected mastitic cows.

## References

Østerås O, Sølverød L, Reksen O., 2006. Milk culture results in a large Norwegian survey--effects of season, parity, days in milk, resistance, and clustering. J. Dairy Sci. 89:1010-1023.

Piepers S, De Meulemeester L, de Kruif A, Opsomer G, Barkema HW, De Vliegher S., 2007. Prevalence and distribution of mastitis pathogens in subclinically infected dairy cows in Flanders, Belgium. J Dairy Res. 74:478-483.