Evaluation of IgG concentration and bacterial load of bovine colostrum in the Benelux region.

P.A.A. Penterman[1], G. Hoflack[2], G. Vertenten[1], B. Sustronck[2].

INTRODUCTION

Ingestion of sufficient amounts of good quality colostrum in the first hours of life is essential for the future health and performance of the calf.

Colostrum quality reflected by its immunoglobulin G (IgG) concentration and its bacterial load can vary widely among cows.

To our knowledge, there has been no recent peer-reviewed study evaluating the quality of colostrum from cattle in the Benelux region.

OBJECTIVE

The aim of the present study was to evaluate the colostrum quality, defined as IgG concentration, and the total bacterial count, from cattle in the Benelux region.

MATERIALS AND METHODS

For this study bovine practitioners were invited to participate in the collection of colostrum from freshly calved cows.

On 88 commercial farms located in Belgium and The Netherlands, a total of 162 colostrum samples were collected at the first feeding of the calves. Colostrum samples were stored at -20°C until processing.

Colostrum quality evaluation:

IgG concentration: Commercial competitive ELISA-test kit (BIO K420, MonoScreen QuantELISA Immunoglobulin Easy, Bio-X Diagnostics S.A., Rochefort, Belgium).

Total bacterial cell count (TBCC): Bactoscan™ automatic bacterial count reader (Bactoscan™ FC+, FOSS, Denmark).

Low colostrum quality criteria: IgG concentrations < 50 g/l or TBCC > 100.000 CFU/ml[1].

All analyses were performed using R software (R Core Team, 2017).

The quality of bovine colostrum in the Benelux region can be improved, as around 25% of the colostrum samples were classified as inadequate to be fed to newborn calves.

To download this paper, scan the QR code!

RESULTS

The number of colostrum samples collected per herd ranged from 1 to 5.

Mean colostral IgG concentrations: 66.3 ± 25.5 g IgG/l (range 14.4 – 150.0 g IgG/l) **(Tab.1, Fig.1)**.

Median TBCC: 7.000 CFU/ml (range 4.000 – 1.000.000 CFU/ml) **(Tab. 1, Fig.1)**.

Based on a criterium of IgG concentration of at least 50 g/l, 22.3% of the colostrum samples were of poor quality.
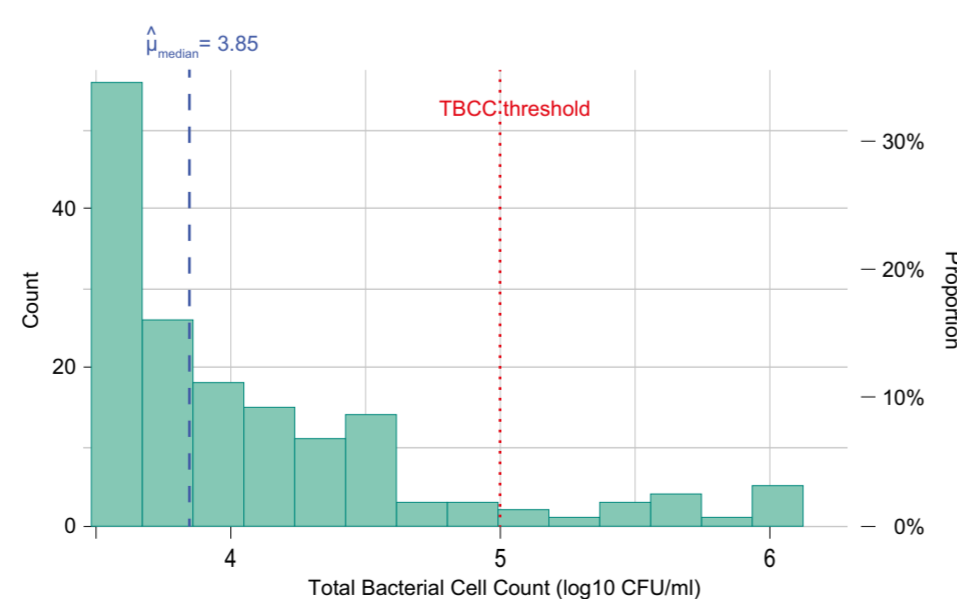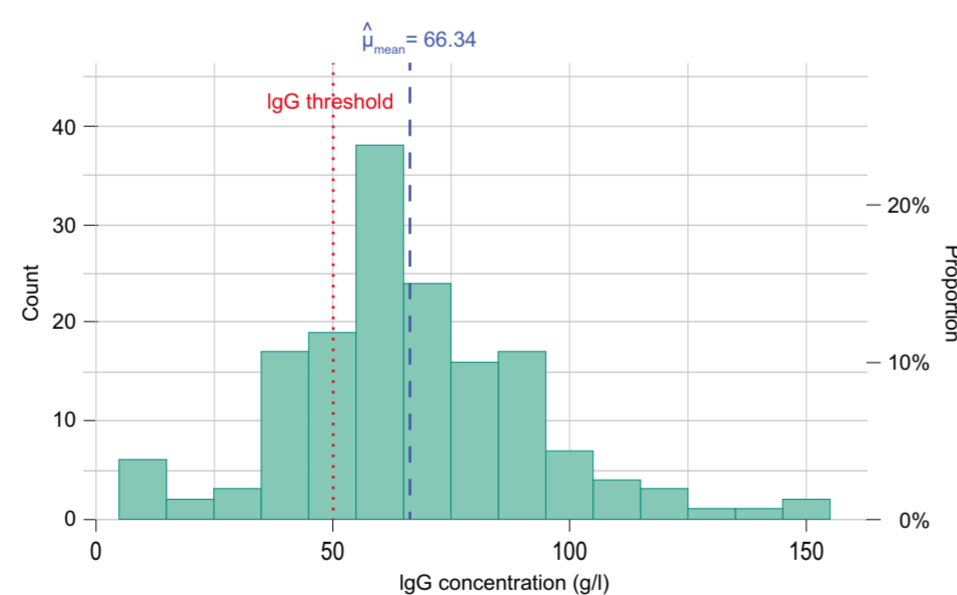
TBCC was above the norm of 100.000 CFU/ml in 10.2% of the colostrum samples.

Taking both quality parameters into account, 26.8% of the colostrum samples were of low-quality[1].

AUTHORS' AFFILIATION

1. MSD Animal Health, Boxmeer.
2. MSD Animal Health, Brussels.

REFERENCES

1. Godden et al. Vet Clin Food Anim 2019; 35:535–556.

TABLE 1. Results of colostrum quality evaluation in samples from 88 commercial cattle farms in the Benelux region.

Measured parameter	Result
Mean colostral IgG concentration	66.3 ± 25.5 g IgG/l (range 14.4 – 150.0 g IgG/l)
Median TBCC	7.000 CFU/ml (range 4.000 – 1.000.000 CFU/ml)

FIGURE 1. Distribution of IgG concentration (left) and TBCC (right) in colostrum samples from 88 commercial cattle farms in the Benelux region. The thresholds are indicted in red and the median of the population with a blue dashed line.

MSD Animal Health