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PathoProof: available mastitis detection in dairy goats

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Somatic cell count (SCC) as an indicator of mastitis

SCC is a good indicator of
udder health in cows



SCC as an indicator of
udder health is still under
discussion in goats



Legislation
limits



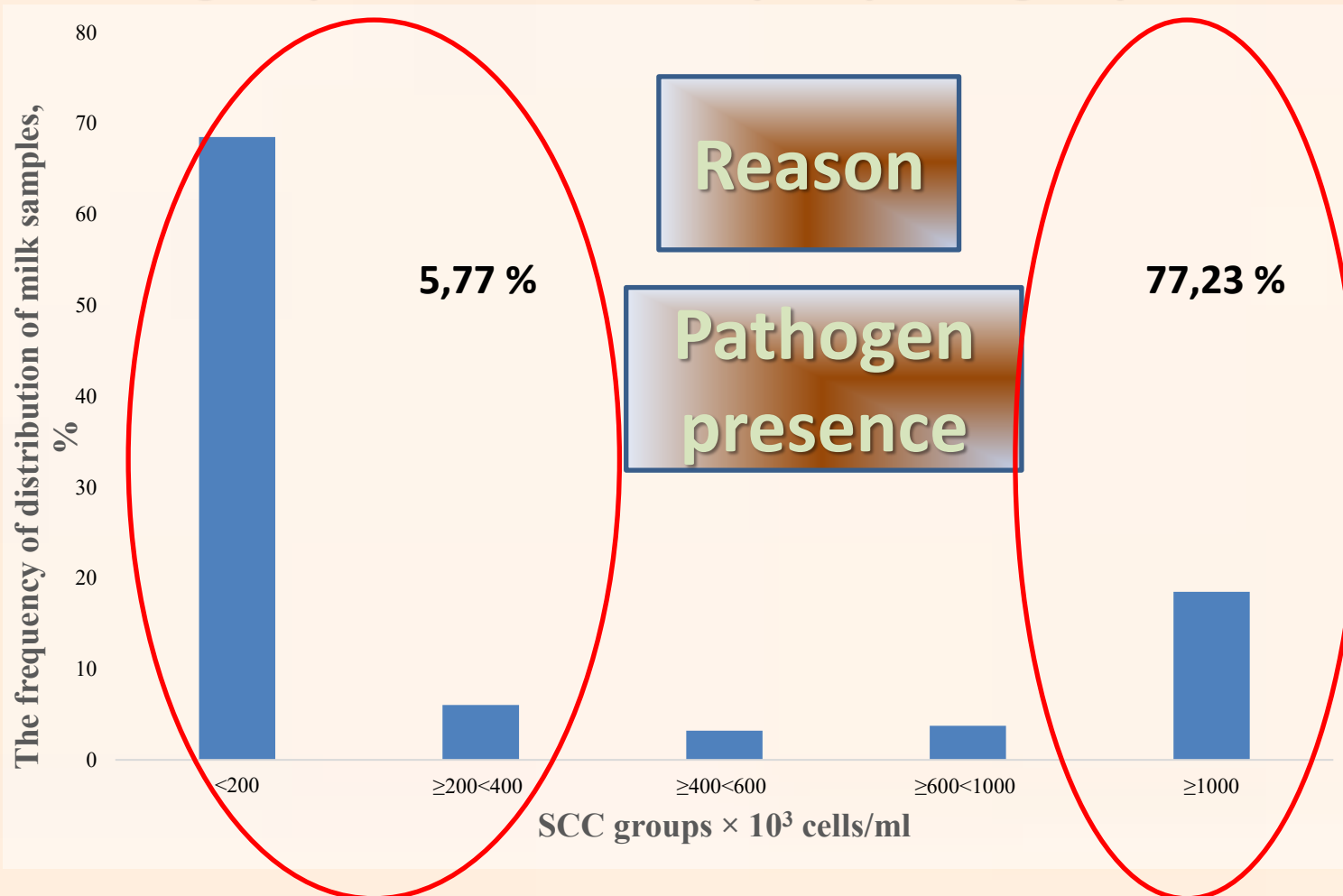
Legislation
limits ?



Somatic cell count is a widely recognized
indicator of mastitis and udder health in
dairy animals, but in goats ... ?

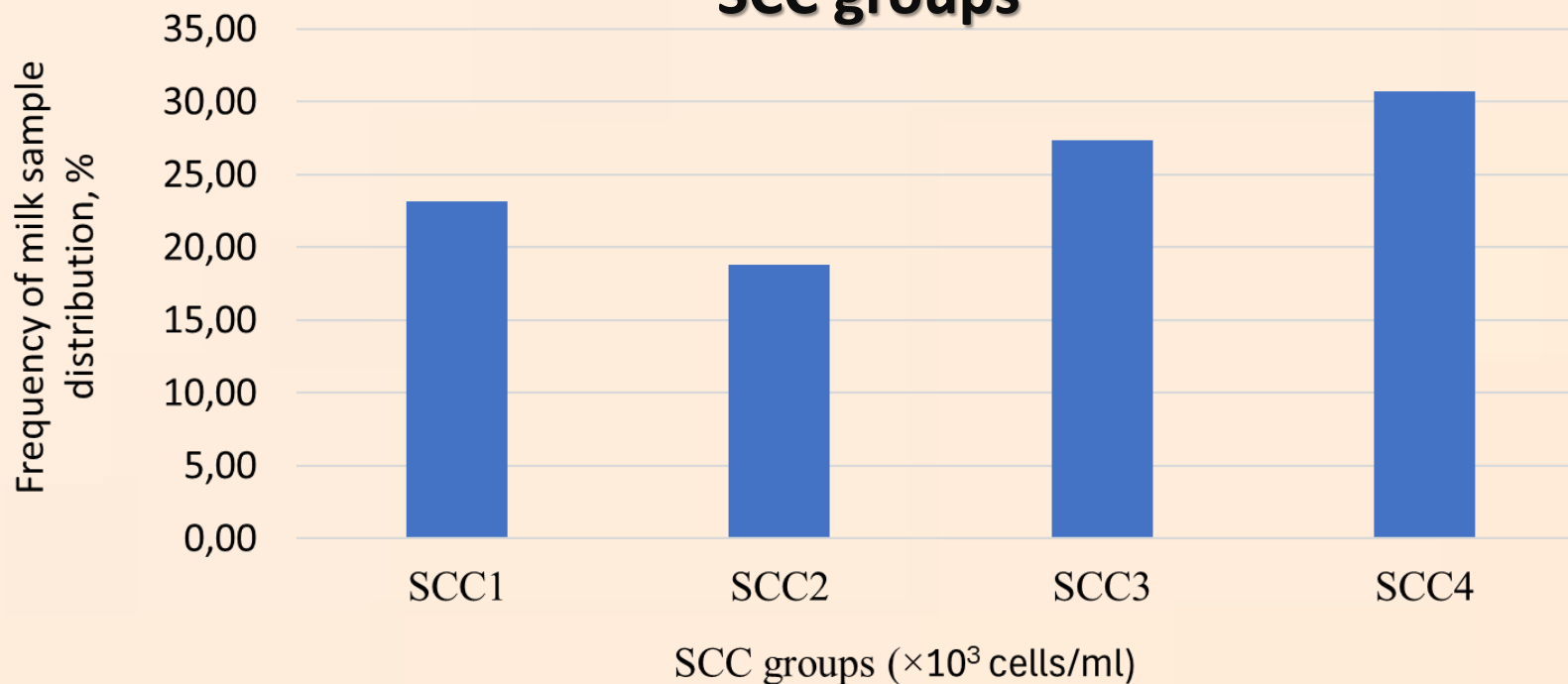


Frequency of distribution of milk samples of ewes in SCC groups and relationship to pathogen presence





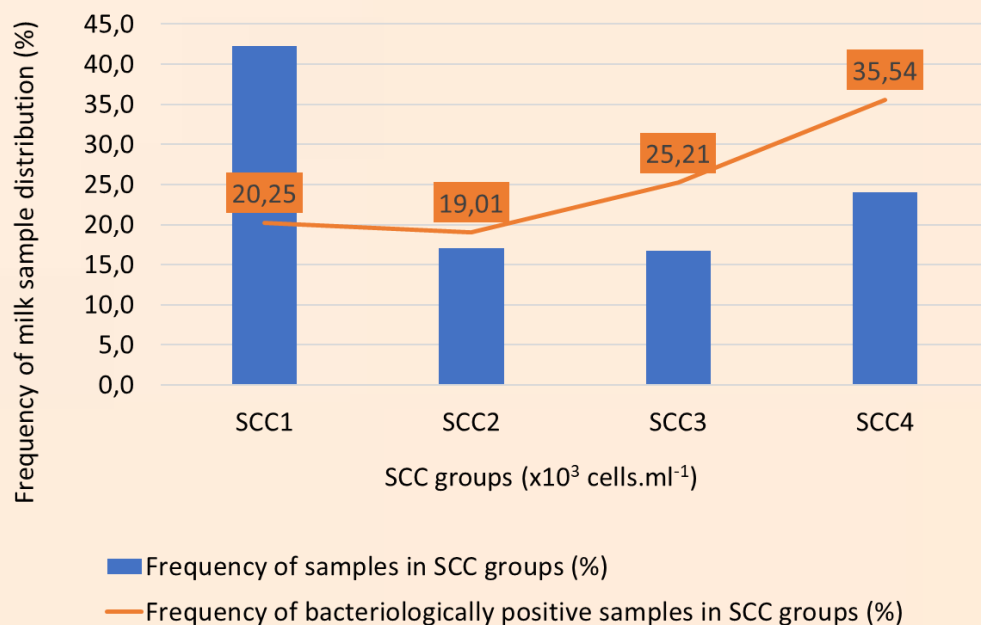
Frequency of distribution of milk samples of goats in SCC groups



SCC1 < 500, SCC2 \geq 500 < 1000, SCC3 \geq 1000 < 2000, SCC4 \geq 2000

Frequency of classification of goat milk samples (n = 743 goats) into individual SCC groups according to data from milk yield testing (n = 1948 samples) carried out on 25 goat farms during 2021, 2022, and 2023

Frequency of distribution of milk samples of goats in SCC groups and relationship to pathogen presence



Reason

Pathogen presence ?

SCC1 < 500, SCC 2 ≥ 500 < 1000, SCC 3 ≥ 1000 < 2000, SCC 4 ≥ 2000 ($\times 10^3$ cells/ml)



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Somatic cell count (SCC) as an indicator of mastitis in goats

Presence of pathogens on SCS

Experiment A (SCC3 and SCC4)

7.48±0.11; 7.16±0.05

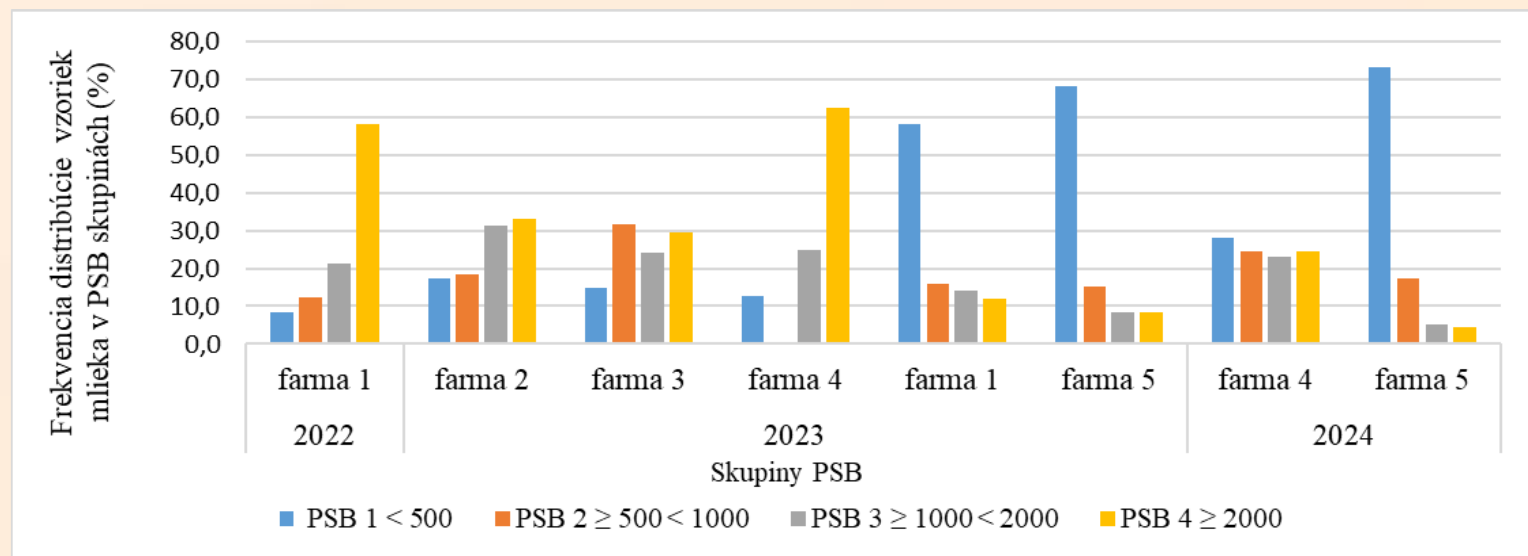
(P=0.0063)

Experiment B (all SCC groups together)

6.90±0.14; 5.86±0.10

(P=0.0001)

Frequency of distribution of milk samples of goats in SCC groups and relationship to farms



The aim of the study



**use the commercially available PCR assay for detecting
pathogens in half-udder milk samples**

Materials and Methods

- 99 half-udder milk samples collected aseptically from a conventional goat farm
- SCC measured using Fossomatic 7
- Pathogen detection by PathoProof Complete-16 PCR kit





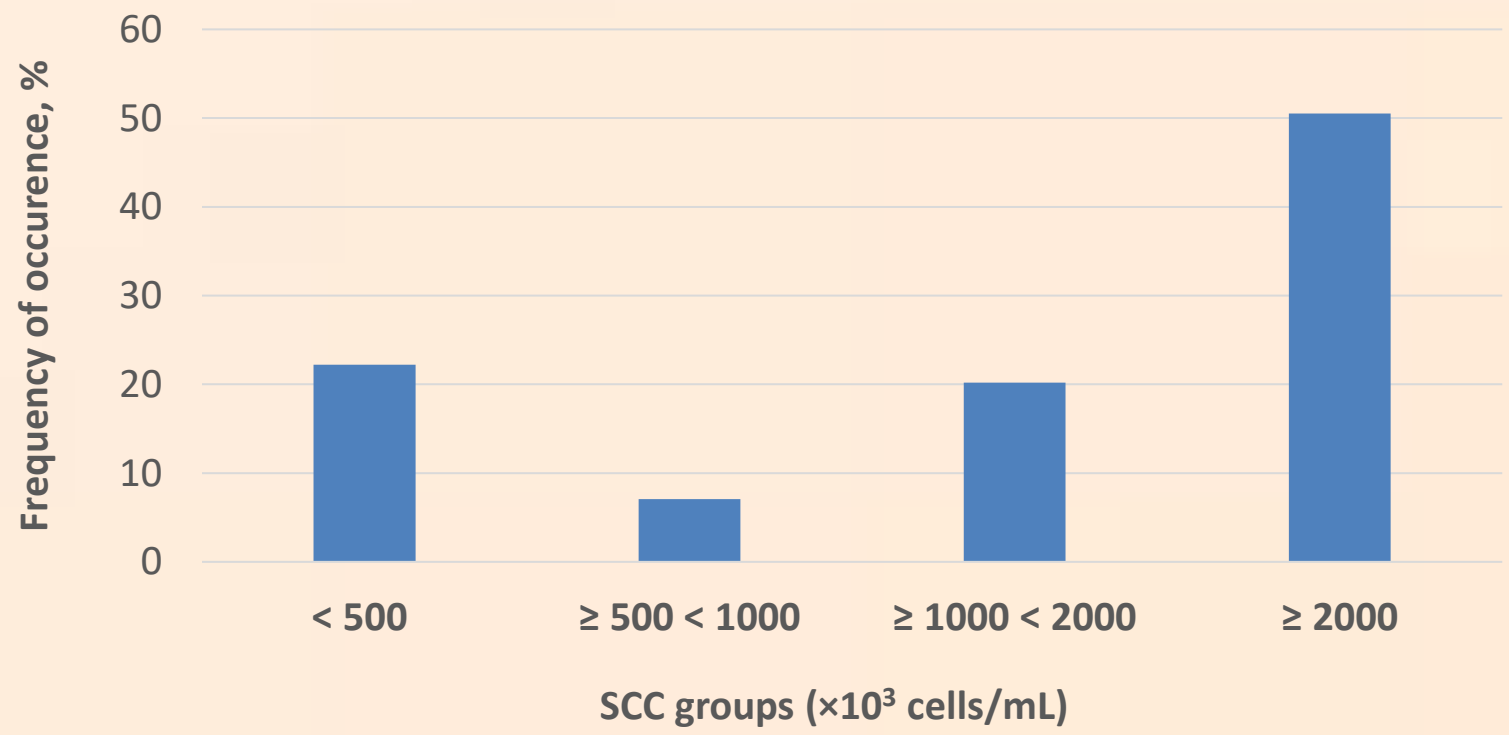
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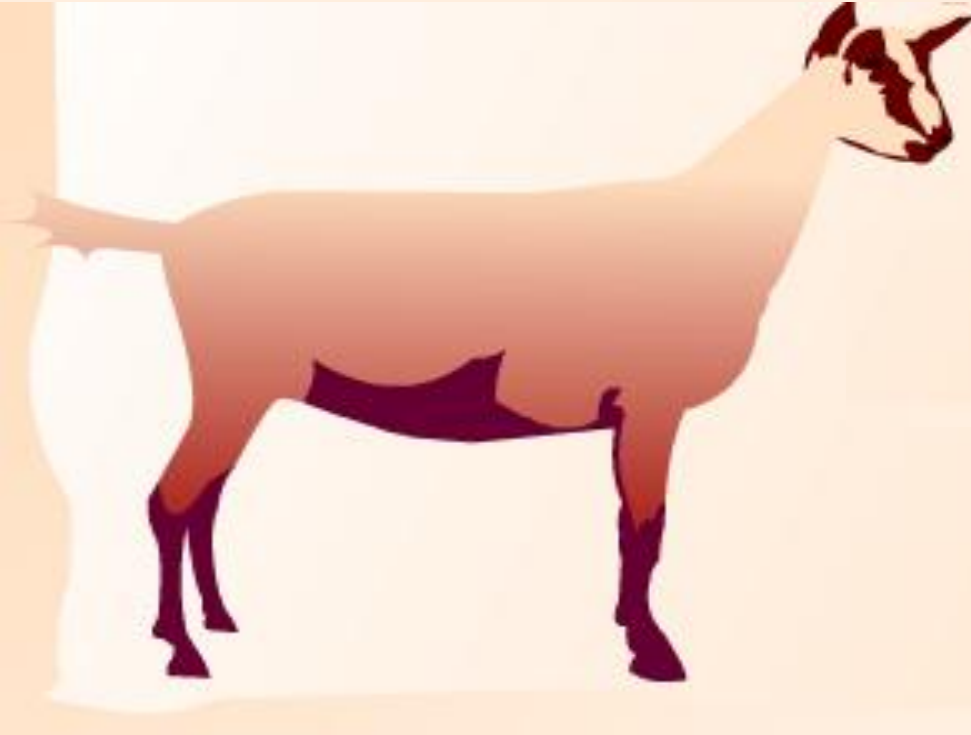
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Results - SCC distribution

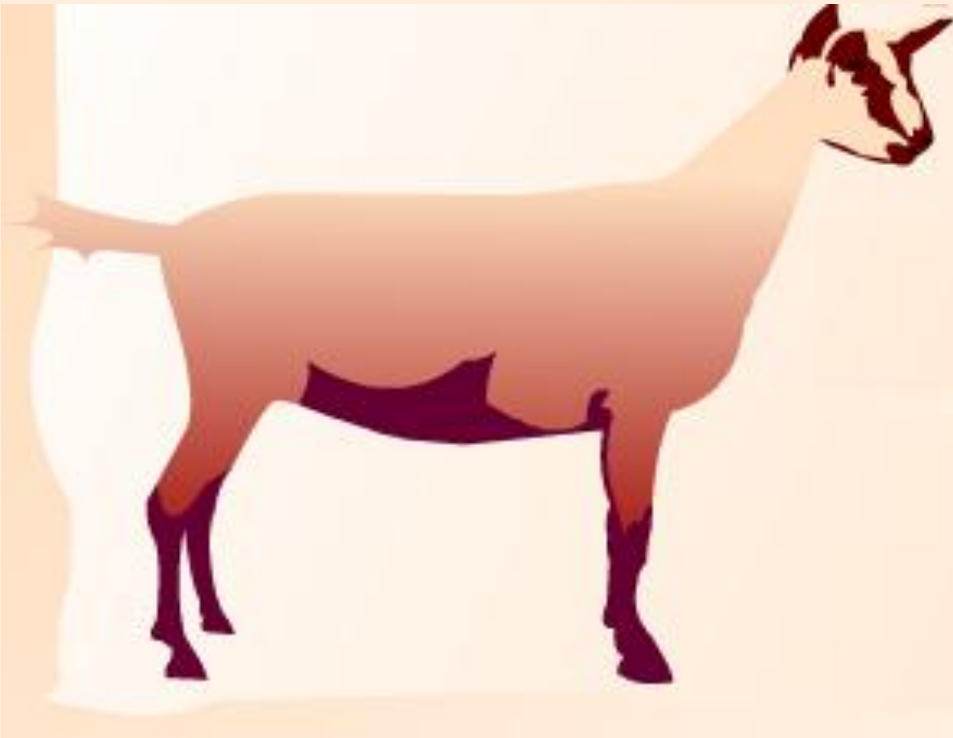


Results - Pathogen detection



- Pathogens detected in 93% of samples (92 out of 99)
 - 71 samples: one pathogen
 - 21 samples: two pathogens
- Most common: *Staphylococcus* spp., particularly coagulase-negative staphylococci (88 samples)

Results - Pathogen detection



- β -lactamase gene found in 70 samples with *Staphylococcus* spp.
- *Prototheca* spp. in 7 samples
- *Staphylococcus aureus* in 3 samples
- *Mycoplasma* spp. in 2 samples



Conclusion

- The high prevalence of positive samples could reflect a high number of samples with high SCC
- On the other side, aseptic milk sampling in parlour could be some risk if PCR methods are used due to possible contamination from the environment.
- Moreover, the absence of conventional bacteriological culture limits the ability to assess pathogen viability and antimicrobial susceptibility, which are crucial for treatment decisions.
- Therefore, results obtained solely from DNA-based PCR methods should be interpreted with caution in both diagnostics and herd health management.

**Can SCC be the reliable indicator of mastitis
in a mastitis control program?**



Thank you for your attention

