

Inter-male comparison of sperm freezability in goats using a purpose-built Sperm Quality Index

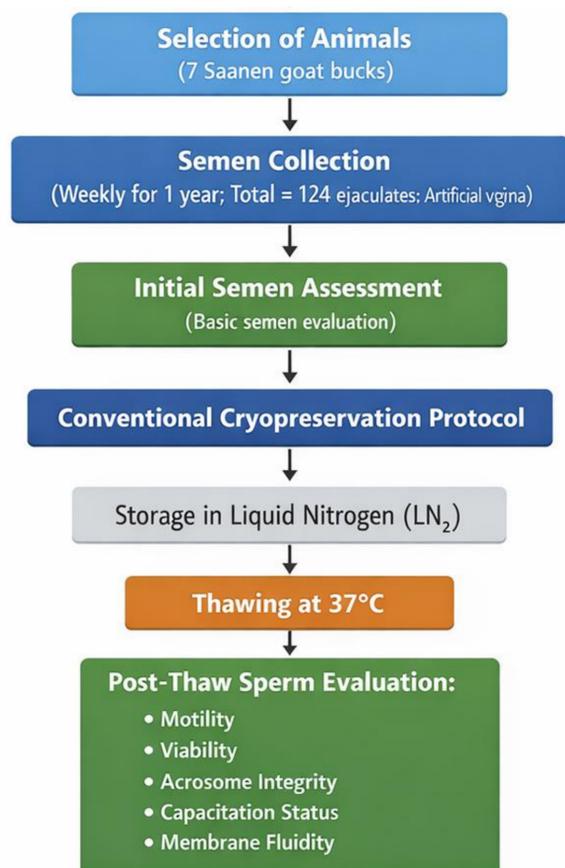
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INTRODUCTION & AIM

In several species, individual variation in sperm freezability has been documented, categorizing males by the response of their sperm to cryopreservation as either “good” or “bad freezers”. Since sperm cryotolerance has been poorly described in goats, the objective of this study was to compare sperm freezability in this species by using a recently developed tool, the Sperm Quality Index (SQI).

METHOD



Two SQIs were produced: SQI–1 which included decreasing sperm variables (progressive motility, viability, CTC–F, and acrosome integrity), and SQI–2 which included increasing variables (CTC–AR and hyper-fluid membranes).

$$SQI1 = \frac{(\text{Progressive motility \%}) + (\text{Viability \%}) + (\text{F pattern \%}) + (\text{Acrosome integrity \%})}{4}$$

$$SQI2 = \frac{(\text{AR pattern \%}) + (\text{Hyper-fluid membranes \%})}{2}$$

Possible differences between males were statistically analyzed.

RESULTS & DISCUSSION

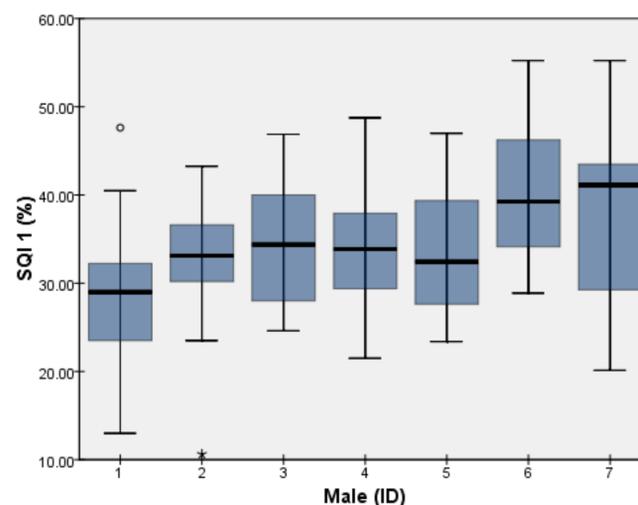


Fig. 1. SQI-1 in frozen-thawed sperm of goat bucks.

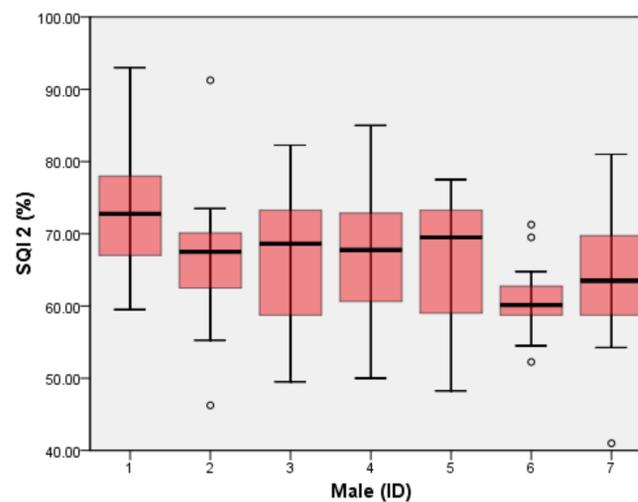


Fig. 2. SQI-2 in frozen-thawed sperm of goat bucks.

Differences observed in both SQI–1 and SQI–2 (particularly between males 1 and 6, and between males 1 and 6 and 7, respectively) indicated a reduced cryotolerance in male 1.

CONCLUSION

These findings could be associated with a variation in seminal plasma and/or sperm plasma membrane composition between individuals. The results support decision making regarding the selection of “good freezers” in ARTs or the implementation of specific modifications in cryopreservation protocols for “bad freezers”.

REFERENCES

- Cardenas-Padilla AJ, and Medrano A (2025) Sperm freezability is associated with melatonin receptor expression in the sperm plasma membrane of Saanen goat bucks (*Capra hircus*), *Veterinary World*, 18(11): 3520–3535.
<https://doi.org/10.14202/vetworld.2025.3520-3535>