COMPARISON OF TWO SPERM SELECTION DEVICES USING VARIABLE SPERM LOADS TO ENHANCE QUALITY AND SPERM HARVEST FROM FRESH-DILUTED STALLION EJACULATES

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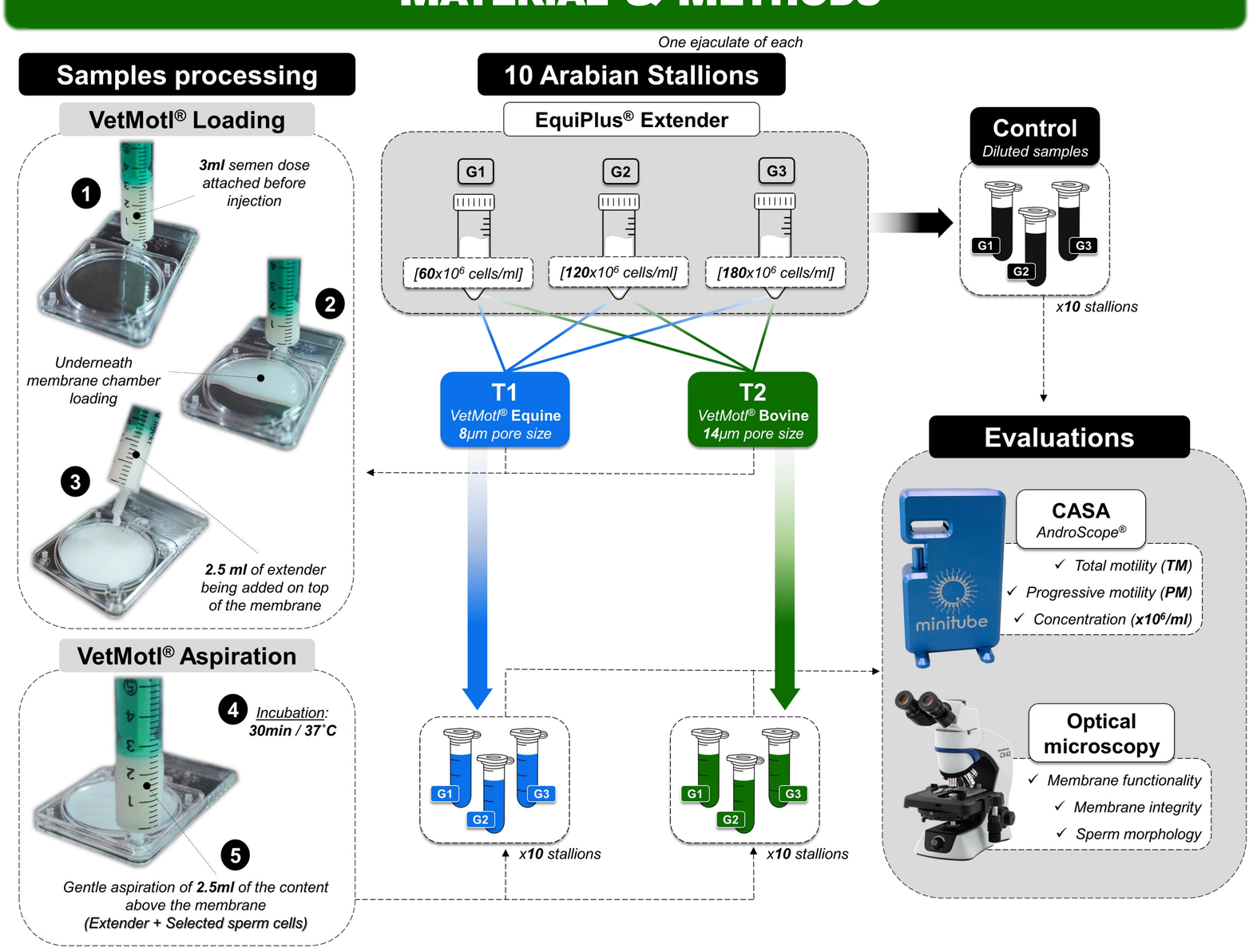
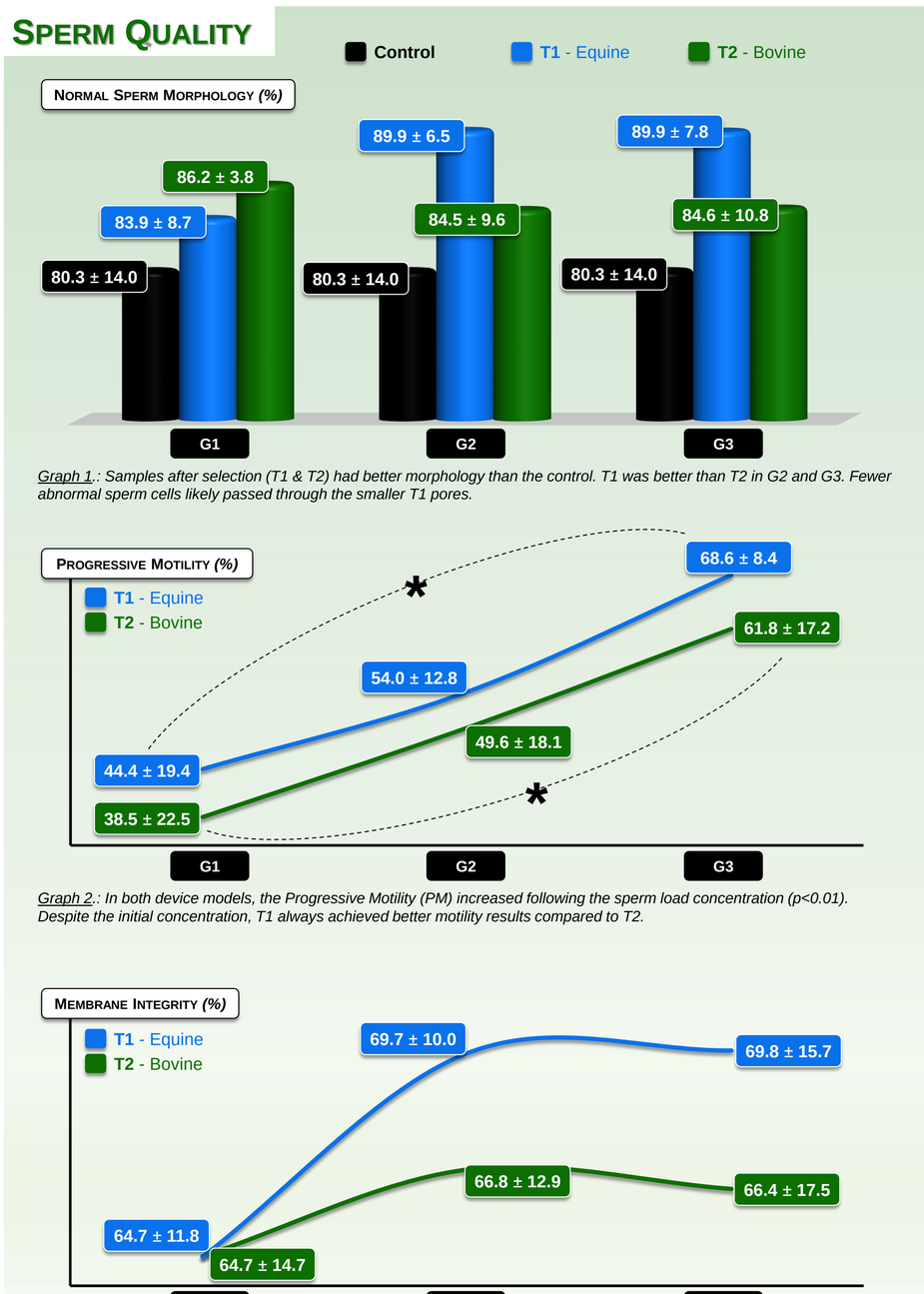
Introduction

Microfluidics sperm separation devices allow improving the recovery of high-quality sperm in many species. VetMotl offers devices for bovine (**VetMotl Multi 3ml - Bovine**) and equine (**VetMotl Multi 3ml - Equine**) sperm separation, being pore diameter size larger for bovine. This study aimed to compare these devices for stallion sperm selection and evaluate the influence of different sperm loads on the quality and quantity of samples retrieved.

Material & Methods



Sperm Quality



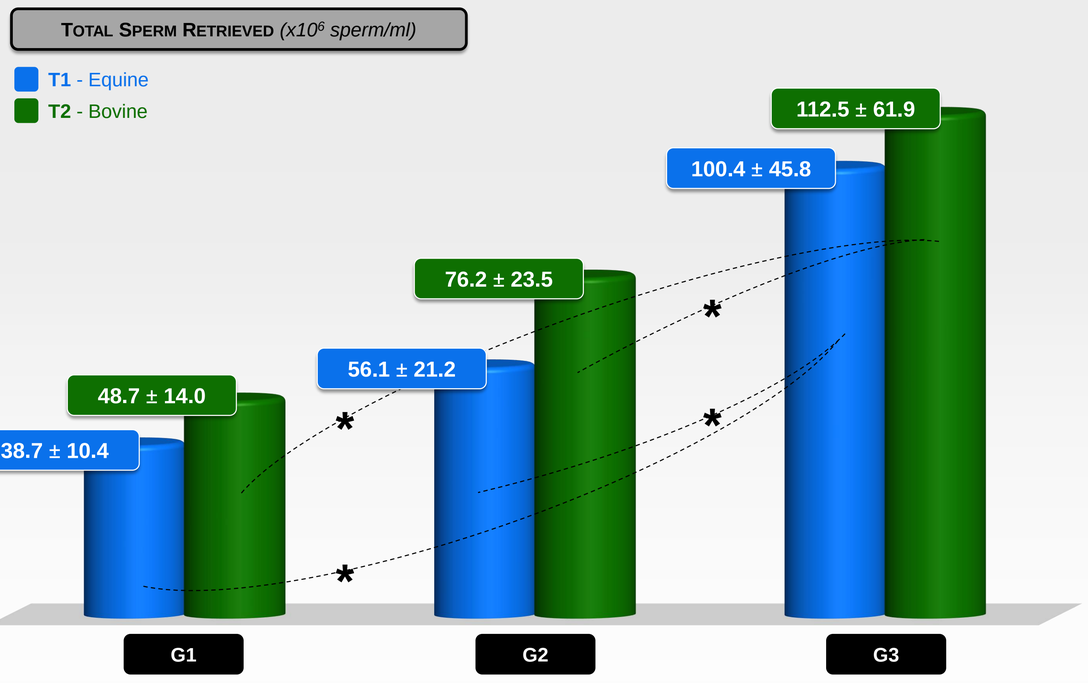
Graph 1.: Samples after selection (T1 & T2) had better morphology than the control. T1 was better than T2 in G2 and G3. Fewer abnormal sperm cells likely passed through the smaller T1 pores.

Graph 2.: In both device models, the Progressive Motility (PM) increased following the sperm load concentration (p<0.01). Despite the initial concentration, T1 always achieved better motility results compared to T2.

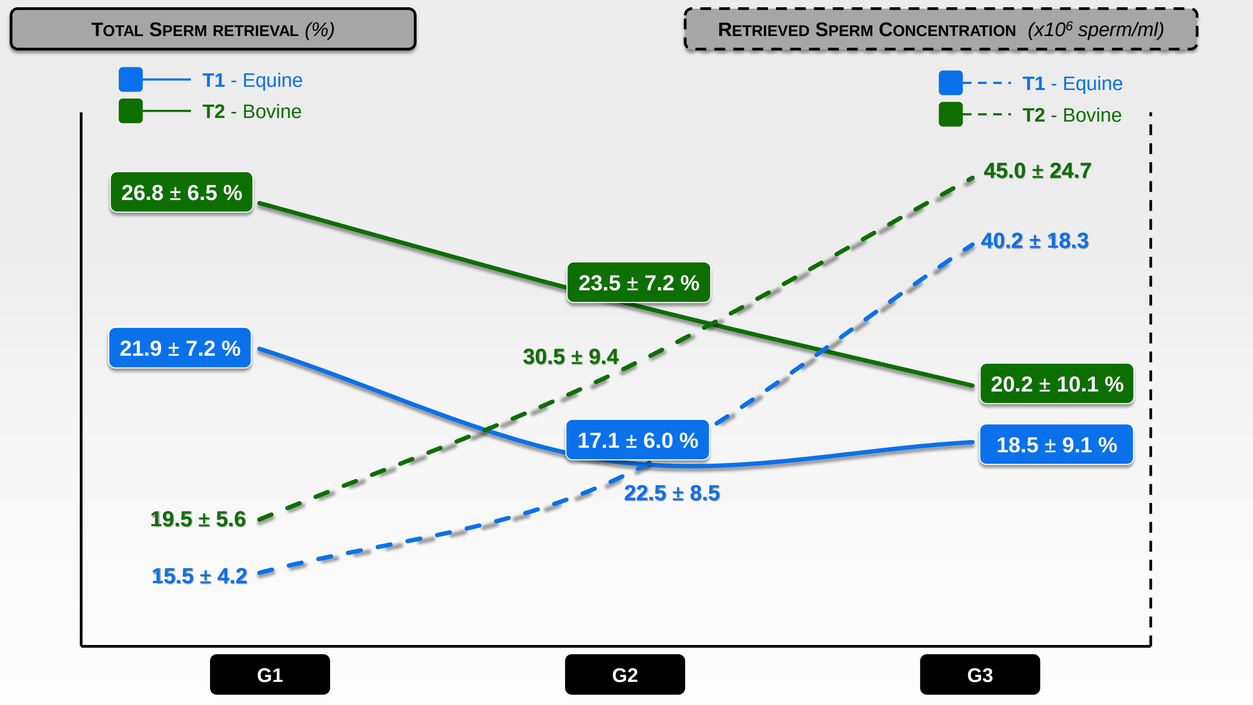
Graph 3.: For the membrane integrity evaluated using the Eosine-Nigrosin test, no differences were found in all three groups between T1 and T2. However, T1 showed slightly higher membrane integrity in G2 and G3.

Results & Discussion

Sperm Retrieval



Graph 4.: The total sperm retrieved (sperm concentration in the aspirated sample x 2.5 ml) was slightly higher in T2 than in T1 for all groups and increased with the total initial sperm load. T1 and T2 in G3 were significantly higher than the same treatments in the other experimental groups.(p<0.01).



Graph 5.: a) The percentage of sperm recovered after selection decreased as the initial load increased from G1 to G2 and G3. b) The concentration of the retrieved samples increased with the improvement of the initial sperm load.

	Total Sperm (x10⁶/ml)			Concentration (x10⁶/ml)		
	G1	G2	G3	G1	G2	G3
Control (Load)	183.3±35.7^{Aa}	331.9±62.9^{Ba}	569.2±142.3^{Ca}	61.1±11.2^{Aa}	110.6±21.0^{Ba}	189.7±47.4^{Ca}
T1 (Recovered)	38.7±10.4^{Ab}	56.1±21.2^{Ab}	100.4±45.8^{Bb}	15.5±4.2^{Ab}	22.5±8.5^{Ab}	40.2±18.3^{Bb}
T2 (Recovered)	48.7±14.0^{Ab}	76.2±23.5^{Ab}	112.5±61.9^{Bb}	19.5±5.6^{Ab}	30.5±9.4^{Ab}	45.0±24.7^{Bb}

Table 1.: Capital letters A, B, and C indicate differences within the lines for both parameters. Lowercase letters a, b, and c indicate differences among lines. (p<0.01)

Conclusion

The method is effective in selecting high-quality sperm. **VetMotl Multi 3ml - Bovine** allows greater sperm retrieval, but better quality was observed when **VetMotl Multi 3ml - Equine** was used with better outcomes when increasing the initial sperm load, for both devices.

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