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Effect of tailectomy, testicular ventilation and Fat-Tail elevation on Awassi ram spermatogenesis

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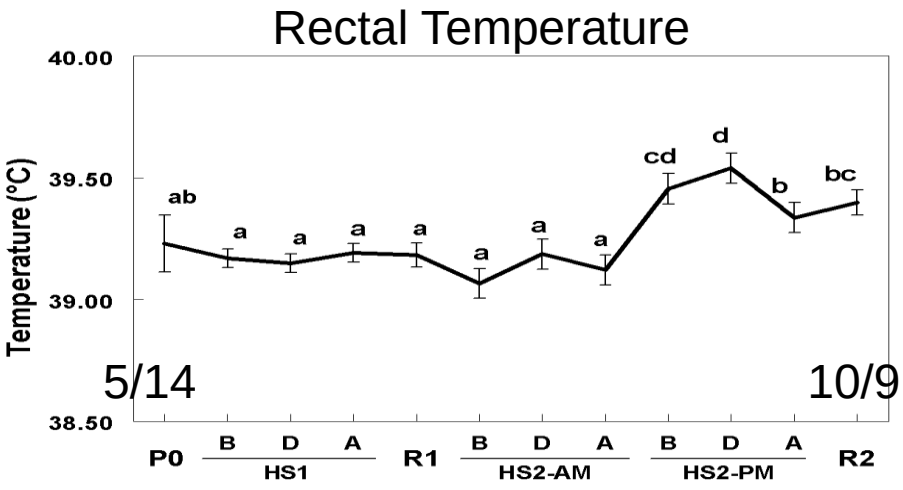
A Background…

INTRODUCTION

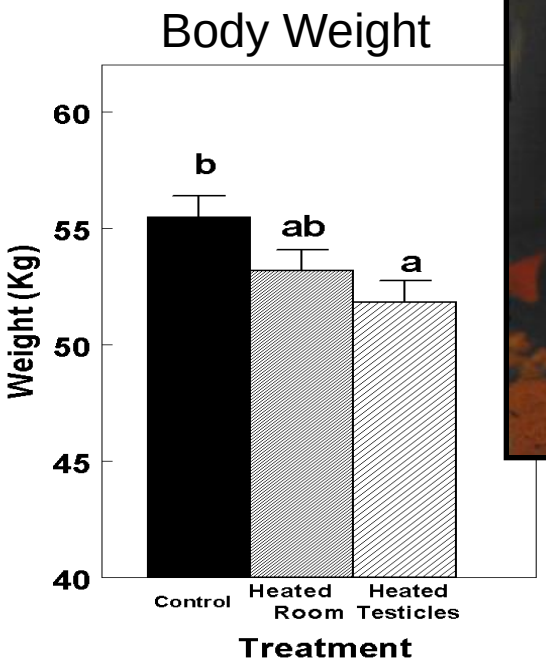
- Awassi sheep have high tolerance for heat stress (HS)
- Common HS alleviation include shearing the Awassi rams,
- But peak reproduction activity coincides with hottest months of the year
- Furthermore whether or not the presence of the fat tail (FT) covering the testicles plays a role against this alleviation

Male Fertility



P0 = Adaptation
HS1= 6 h heat stress
R1 = Rest after HS1
HS2= 12 h Heat Stress
R2 = Rest after HS2

B=Before HS
D= during HS
A=After HS



Abi Saab et al., 2011. Leb. Sci. J. 12:31

Objectives

- Evaluate the role of the fat tail on spermatogenesis, namely by removing the tail via tailectomy

- Observe the effect of different methods of heat stress alleviation, namely shearing, localized ventilation, lifting the fat tail on spermatogenesis and semen quality

Materials and Methods

- **exp 1:** 6 Awassi rams
  - Control
  - tailectomy

- **exp 2:** 12 awassi rams
  - ventilated testis
  - Lifted tail of shorn rams
  - Lifted tail of unshorn rams

Experiment 2

Lifted Tail

Ventilated testicles

In both experiments

- Environmental temperature daily
- Body temperature once weekly for 49 d
- Body weight once every 2 weeks
- Testicular length and circumference once per week
- Testicular volume was measured via water displacement

Semen Evaluation

- Semen collected via electroejaculation
- once per week for 49 days before, during and after treatments
- Semen evaluated for volume, appearance, motility, concentration and abnormalities

Satistical Analysis

- Data were analyzed using as CRD using SPSS 10.0, means compared using the LSD, presented LSMeans ± SEM

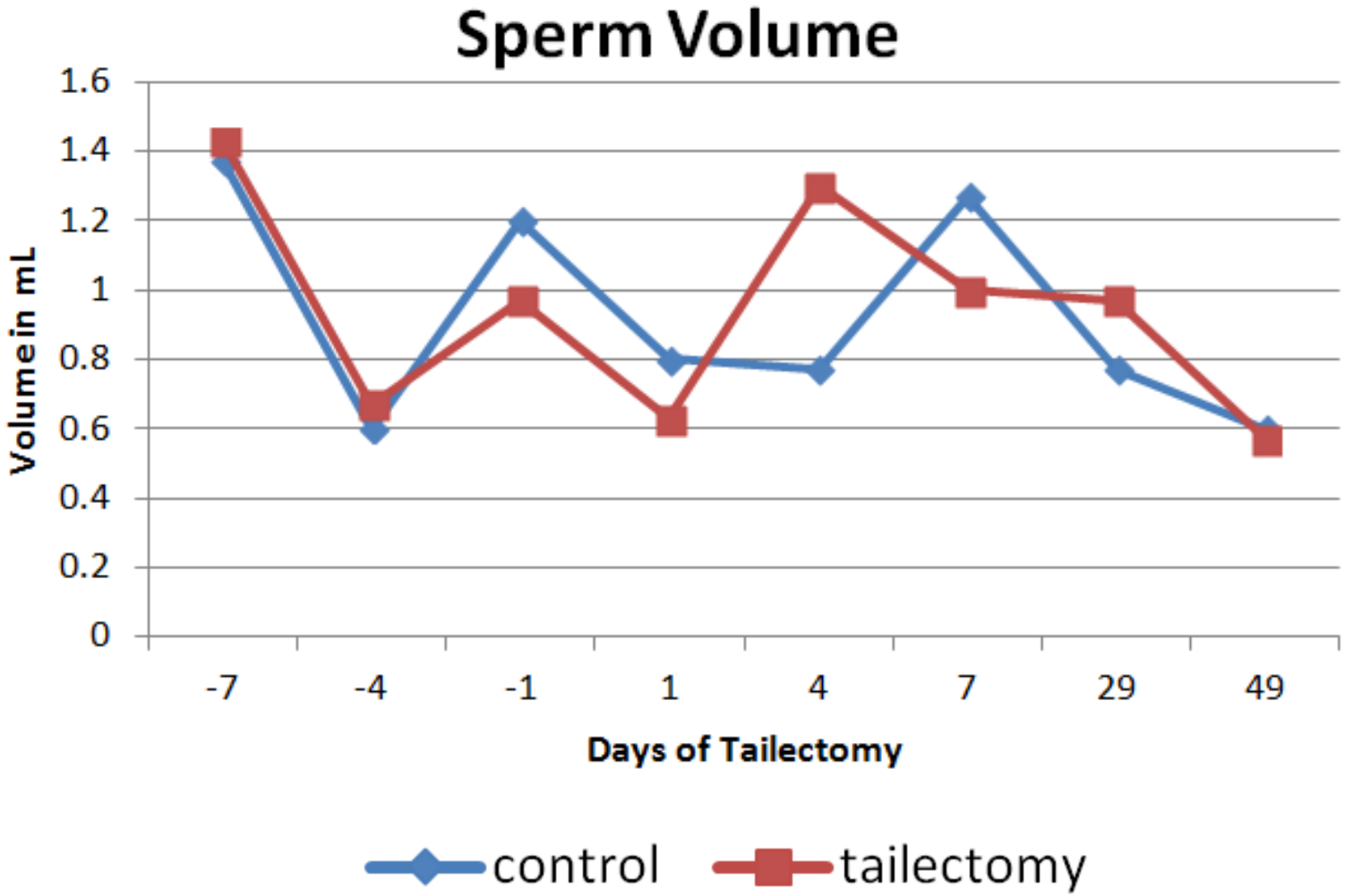
RESULTS

Environmental Parameters

- Ambient temperature: 27 to 29°C
- Relative humidity: 80 to 85%.

- High adaptability of Awassi rams was observed by **no difference** (P>0.10) in both exp in
  - ram body weight
  - Rectal temperature,
  - respiration and heart rates
  - testicular circumference and volume

Experiment 1



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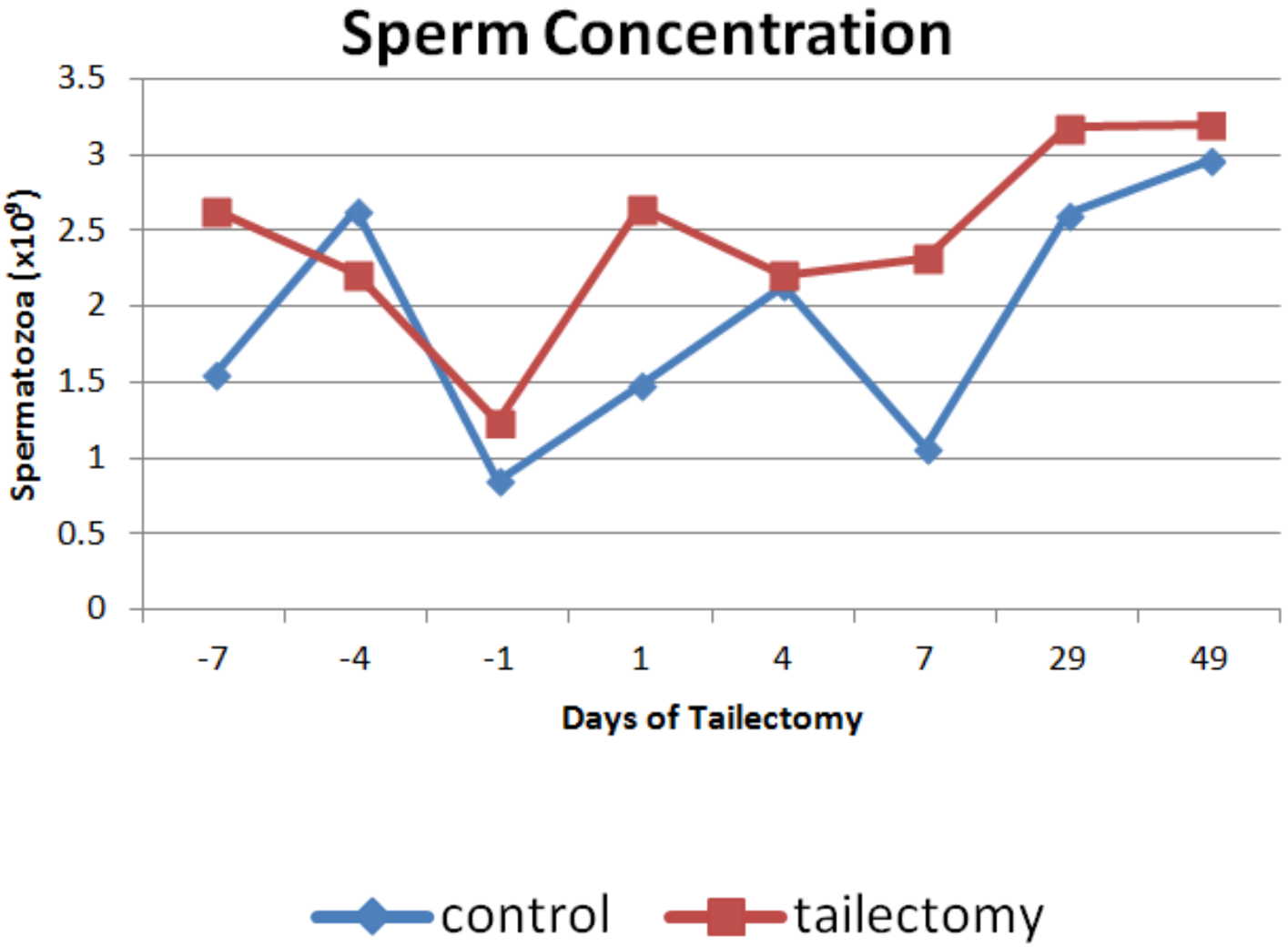

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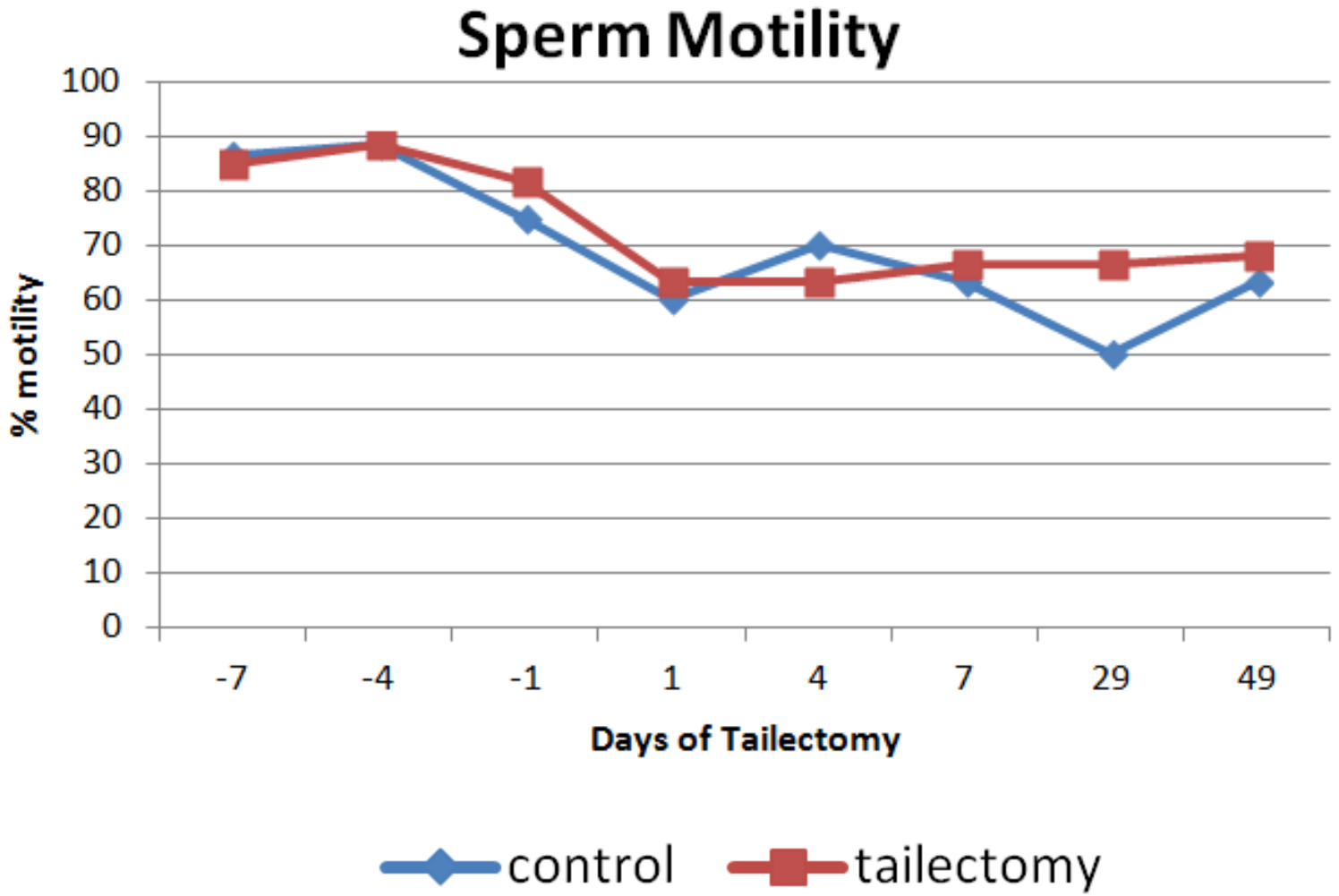

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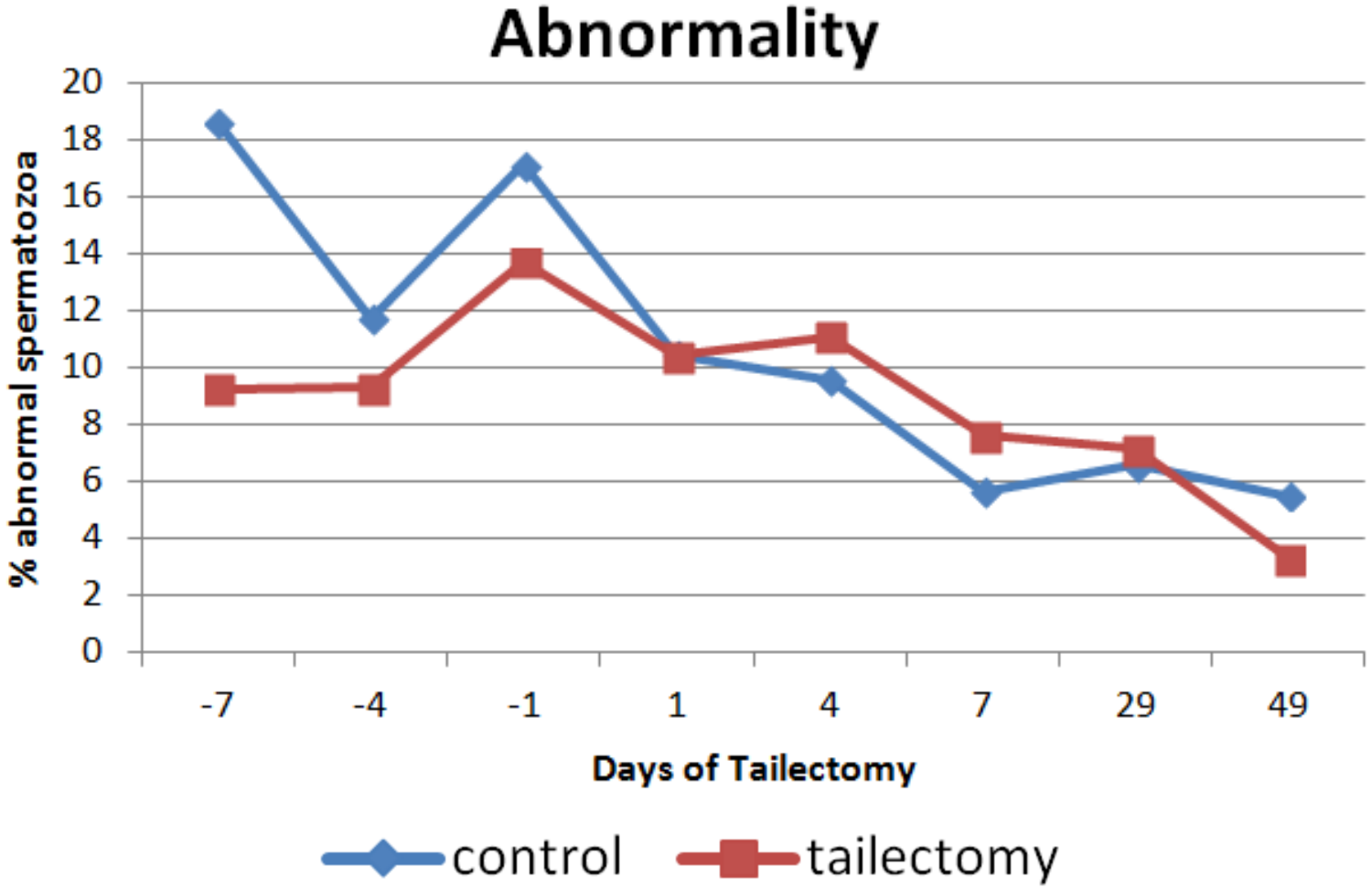
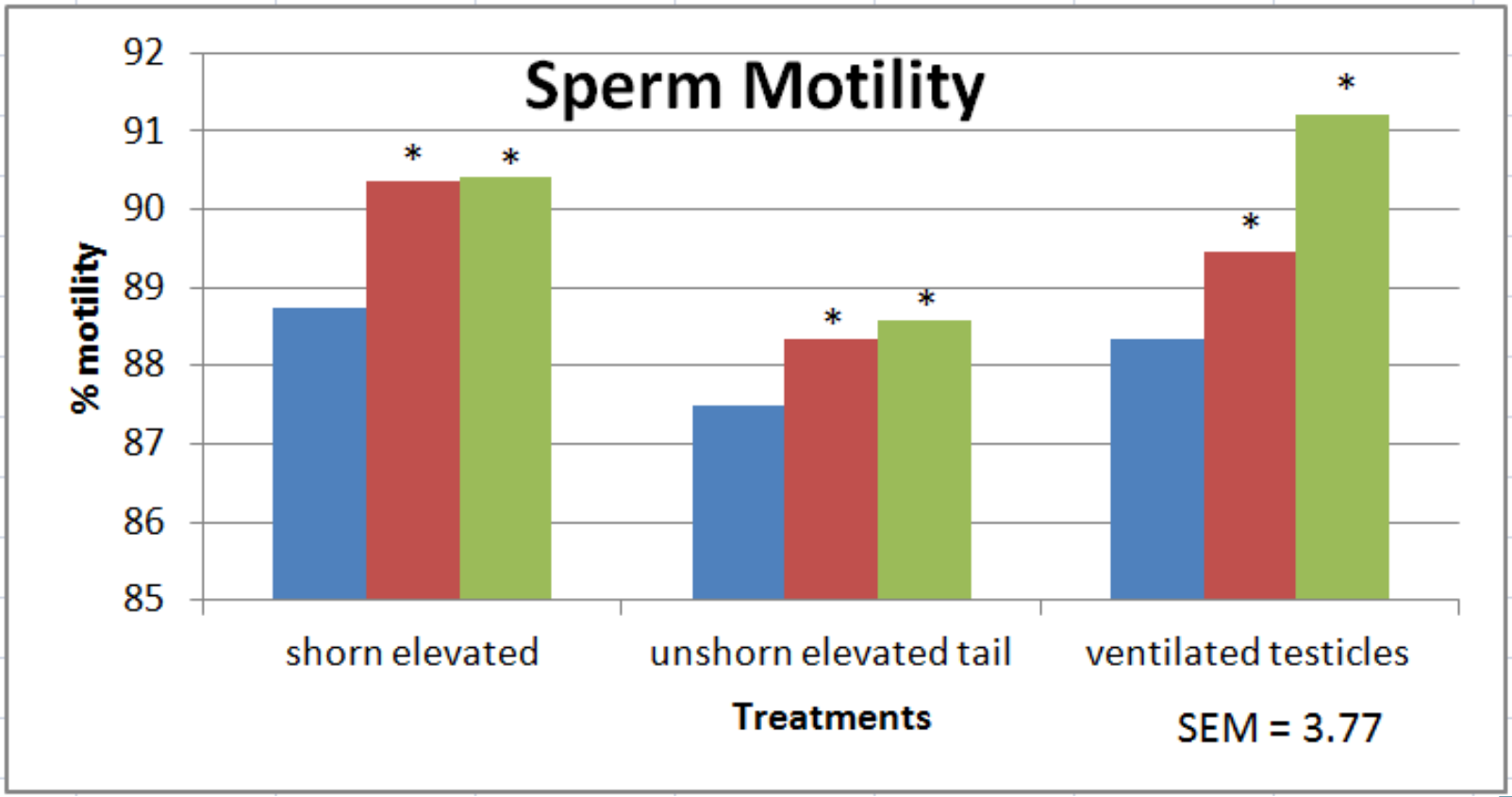
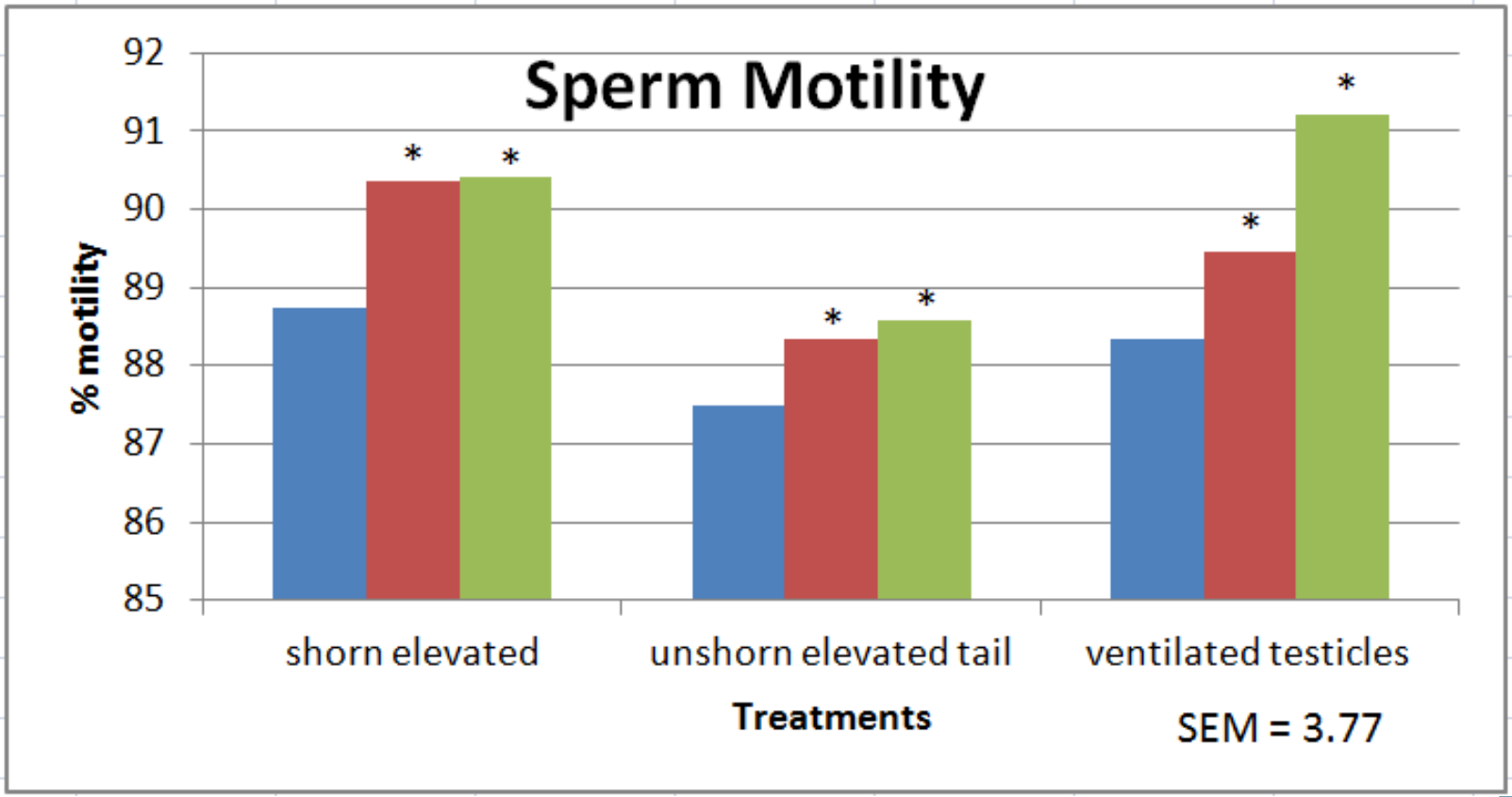


Experiment 2



Experiment 2



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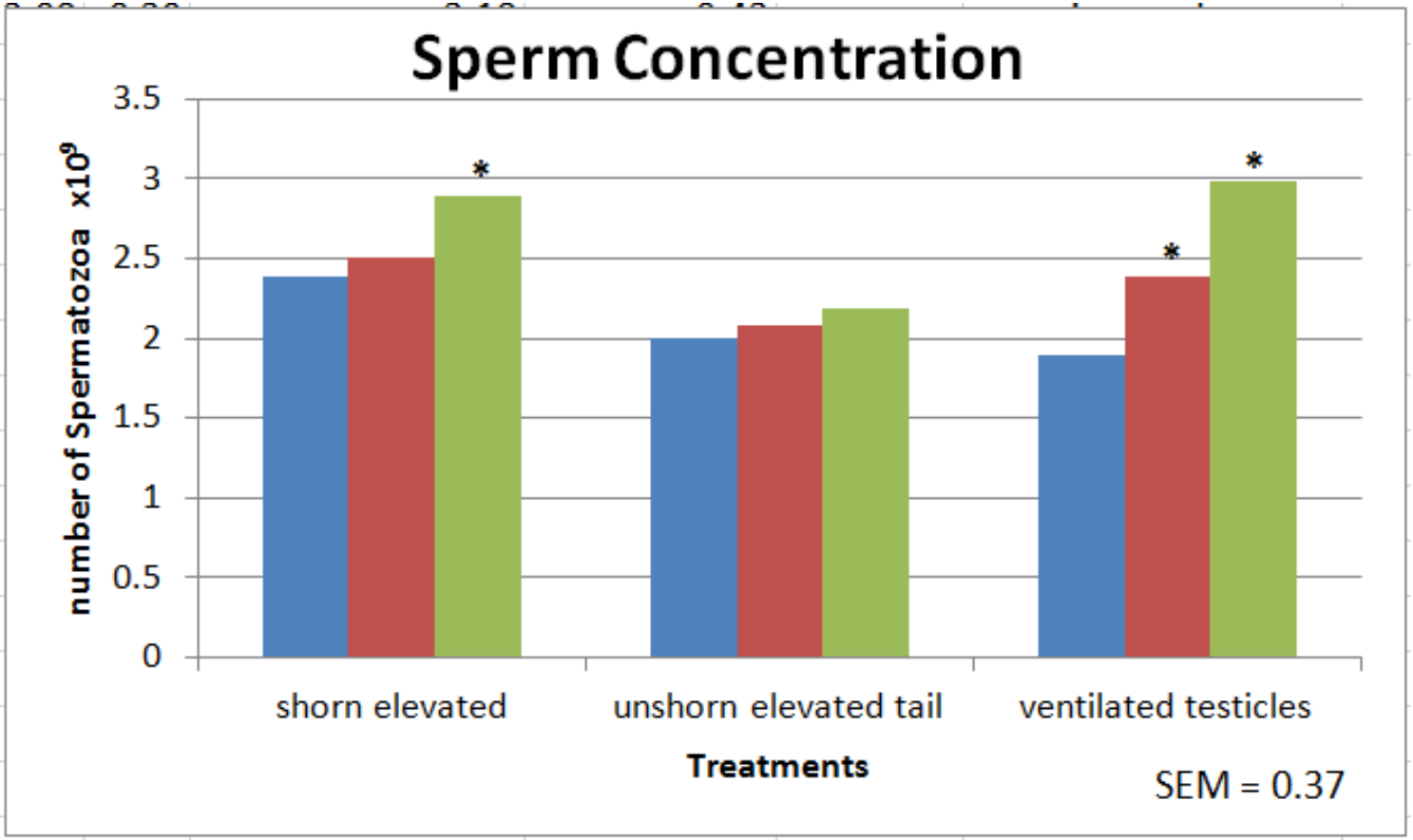

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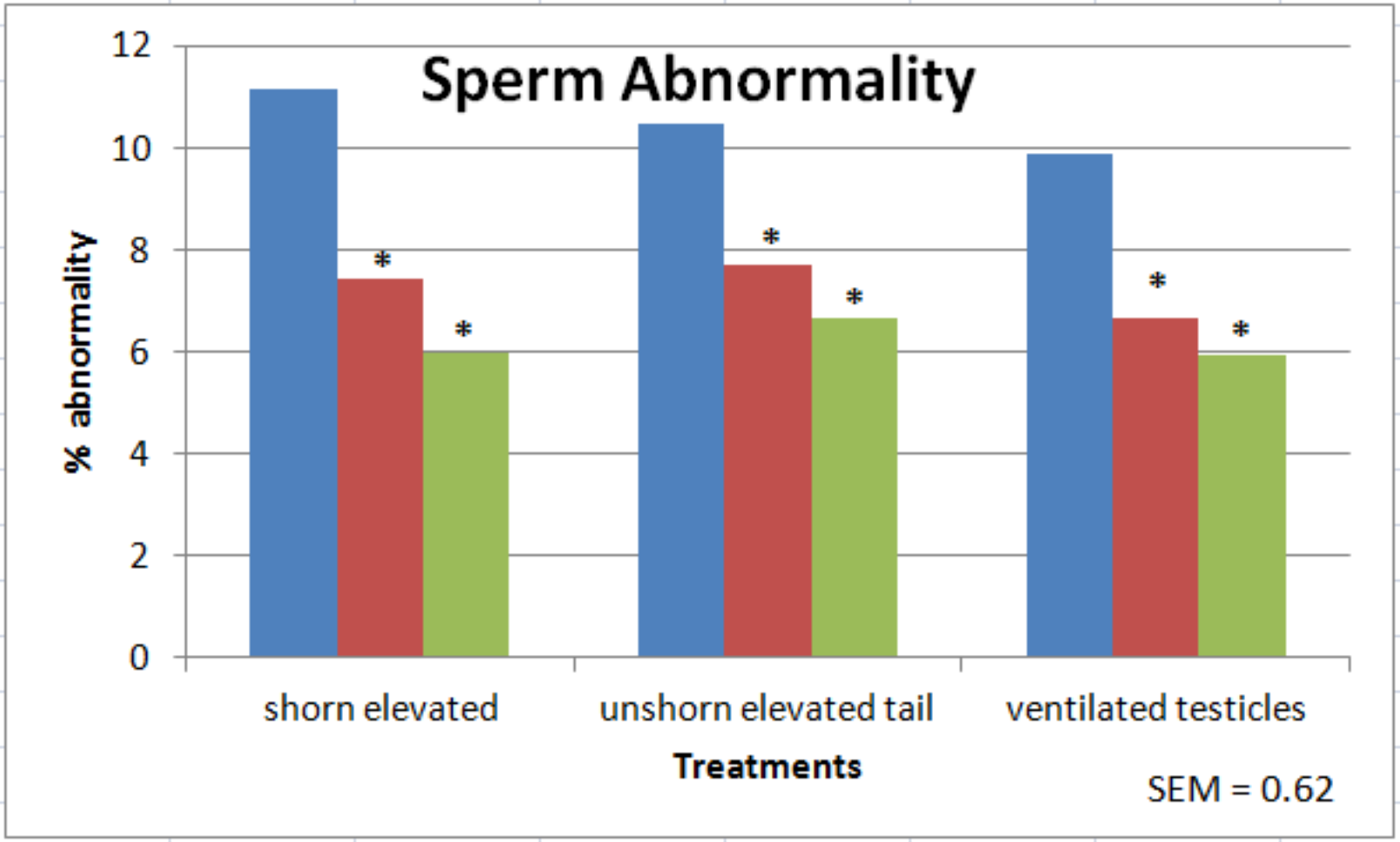

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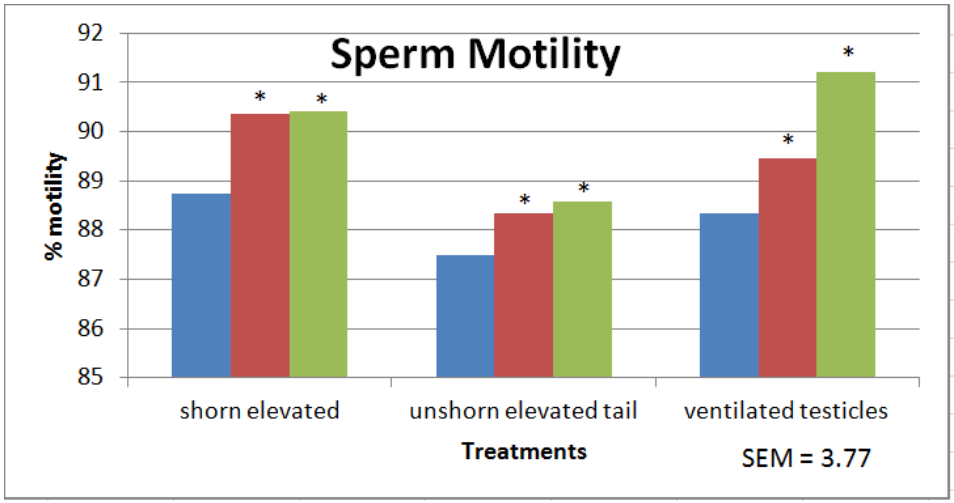

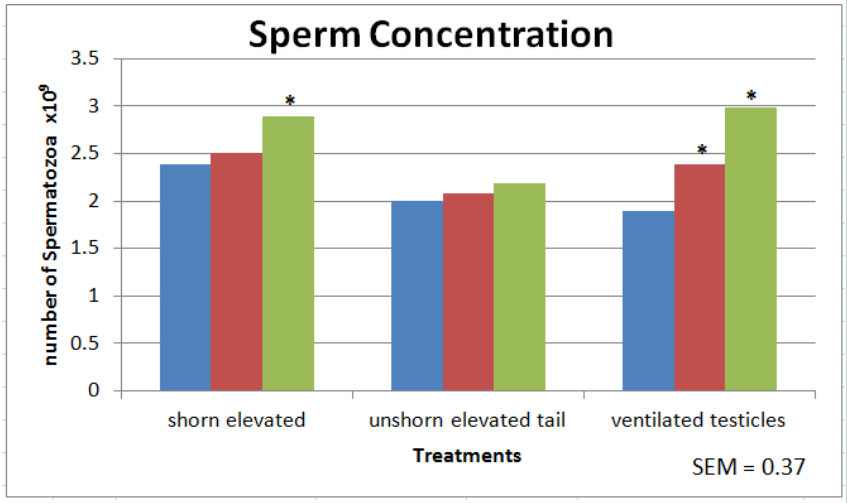

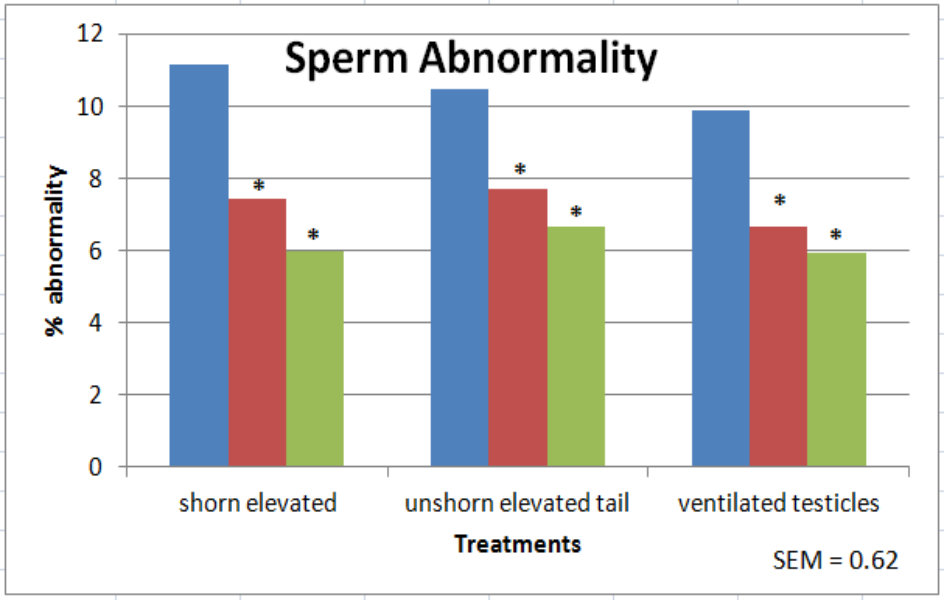

Pre-exp Exp

Post-Exp

Conclusion

- Increased heat stress conditions highly affects spermatogenesis even in highly adapted Awassi Rams
- Fat Tail contributes to a decrease in semen quality rather than heat stress exacerbation
- Any alleviation technique will increase sperm counts, motility and volume, while decreasing sperm abnormalities.

IMPLICATIONS

- **Lebanon is recognized for very hot, dry summers that coincide with the peak of reproductive breeding of Awassi Rams**
- **AND** increasing temperatures associated with global warming are seen with more days with record high temperatures mostly in July and August
- **THUS** The possibility of alleviating the heat stress on Awassi rams is of utmost importance to allow for more successful reproduction, less sperm abnormalities and higher sperm counts and motility


Questions ?