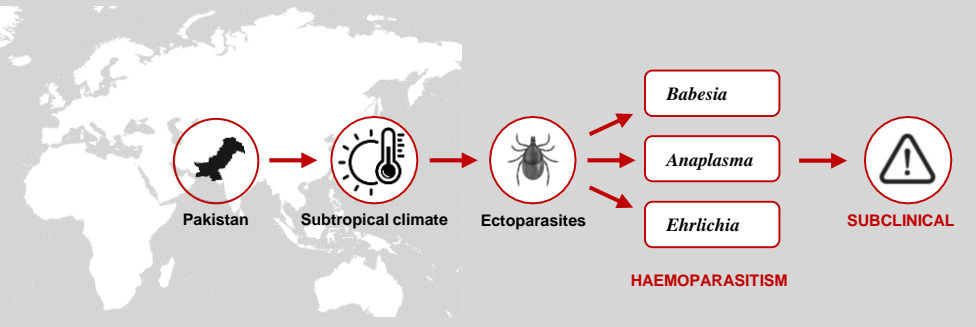


# Differences in haematological, hormonal, and semen parameters in dogs with subclinical haemoparasitism under subtropical conditions

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## BACKGROUND:



## PROBLEMATIC:

- ✓ Many dogs remain subclinical, and often go undiagnosed (1, 2). Thus, the potential role of haemoparasitism as an underlying cause of male infertility remains underexplored (3, 4).
- ✓ The study aims to evaluate effects of subclinical haemoparasitism on haematological, hormonal, and semen parameters in male dogs under subtropical conditions.

## MATERIAL AND METHODS:

**Dog breeds:** Bully Kutta | German Shepherd | Labrador Retriever

**Study group:** n = 50 | 2-6 yrs | healthy dogs with no clinical illness

**Enrollment:** Ear prick for making thin blood smears  
Field staining A and B for microscopic exam at 100x  
Presence of intraerythrocytic parasitic inclusion bodies

**Sampling:** Blood collection through cephalic vein puncture  
Semen collection through digital stimulation

**Statistics:** Independent t-test (P<0.05), SPSS.

## HAEMATOLOGICAL PARAMETERS:

**Blood sample** **BC-30Vet®** Mindray, China

HAEMOTOLOGY	NON-INFECTED	INFECTED
HB [g/dl]	16.01±0.48 <sup>a</sup>	12.92±0.76 <sup>b</sup>
RBCs [10 <sup>12</sup> /L]	6.76±0.20 <sup>a</sup>	5.62±0.28 <sup>b</sup>
HCT [%]	44.64±1.25 <sup>a</sup>	35.61±1.98 <sup>b</sup>
MON [10 <sup>9</sup> /L]	0.91±0.17 <sup>b</sup>	1.09±0.06 <sup>a</sup>
EOS [10 <sup>9</sup> /L]	0.61±0.11 <sup>b</sup>	1.27±0.19 <sup>a</sup>
MON [%]	6.23±0.36 <sup>b</sup>	8.24±0.35 <sup>a</sup>
EOS [%]	4.54±0.64 <sup>b</sup>	9.43±1.52 <sup>a</sup>

Mean ± SEM of haematological parameters having differed significantly.  
No difference found in MCV, MCH, MCHC, WBC, NEU, LYM and PLAT.

## HORMONAL PARAMETERS:

**Blood sample** **MiniViDAS®**, Biomerieux, France

HORMONE ASSAY	NON-INFECTED	INFECTED
Testosterone [ng/mL]	2.66±0.51	2.58±0.25
Cortisol [µg/dL]	7.32±0.82	7.77±1.58

## SPERM KINEMATICS:

**Semen sample** **AndroVision®** Minitube, Germany

SEMEN ANAYLSIS	NON-INFECTED	INFECTED
Conc. [10 <sup>6</sup> /ml]	311.4±15.92 <sup>a</sup>	149.3±6.66 <sup>b</sup>
Total Motility [%]	89.10±1.65 <sup>a</sup>	80.27±2.98 <sup>b</sup>
Progressive M [%]	86.25±2.08 <sup>a</sup>	77.53±3.02 <sup>b</sup>
Forward PM [%]	60.05±3.37 <sup>a</sup>	50.53±2.81 <sup>b</sup>

Mean±SEM sperm concentration & motility parameters having differed significantly.  
No difference seen in sperm velocity (VCL, VSL, VAP, DCL, DSL, DAP) or trajectory (BCF, ALH, STR, LIN, WOB, HAC, Radius, Rotation) parameters.

## SPERM QUALITY BIOMARKERS:

**Semen sample** **BX-51®** Olympus, Japan

**STAINING METHODS**

**Viability:** Live sperms percentage (Eosin/Negrosin)  
**Morphology:** Normal sperms percentage (Eosin/Negrosin)  
**PMI:** Plasma membrane integrity (Hypo-osmotic solution)  
**MMI:** Mitochondrial membrane integrity (Rhodamine 123)  
**DNAI:** DNA membrane integrity (Acridine orange)

Parameter	NON-INFECTED	INFECTED
Viability	~88 <sup>a</sup>	~78 <sup>b</sup>
Morphology	~88 <sup>a</sup>	~76 <sup>b</sup>
PMI	~86 <sup>a</sup>	~76 <sup>b</sup>
MMI	~85 <sup>a</sup>	~77 <sup>b</sup>
DNAI	~98 <sup>a</sup>	~98 <sup>a</sup>

All parameters differed significantly except DNA integrity.

## CONCLUSIONS:

- ✓ Subclinical haemoparasitism in dogs was associated with significant alterations in haematological and semen quality parameters.
- ✓ This suggests potential implications for male fertility, without clear evidence for the involvement of endocrine pathways.
- ✓ Routine screening for haemoparasites, even in asymptomatic dogs, may be incorporated in the breeding soundness exam to improve both the general and reproductive health in dogs.

## REFERENCES:

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- 3) Ubah et al. Veterinary and Animal Science, 2019: 31:7:100049.
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