- **Abstract no. 434**: "Effect of transport for up to 24 hours followed by twenty-four hours recovery on liveweight, physiological and haematological responses of bulls"
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Effect of transport for up to 24 hours followed by twenty-four hours recovery on liveweight, physiological and haematological responses of bulls

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Introduction

There is strong public interest and scientific endeavour aimed at ensuring that the welfare of transported animals is optimal.

Long distance transport ?

Objectives

- To investigate the effect of transport on liveweight, physiological and haematological responses of bulls after road transport of 0, 6, 9, 12, 18 and 24h.

Welfare Indices

- Eighty-four continental x bulls (mean weight (s.d.) 367 (35) kg) were randomly assigned to one of six journey (J) times of 0, 6, 9, 12, 18 and 24h transport at a stocking density of 1.02m^2/bull.

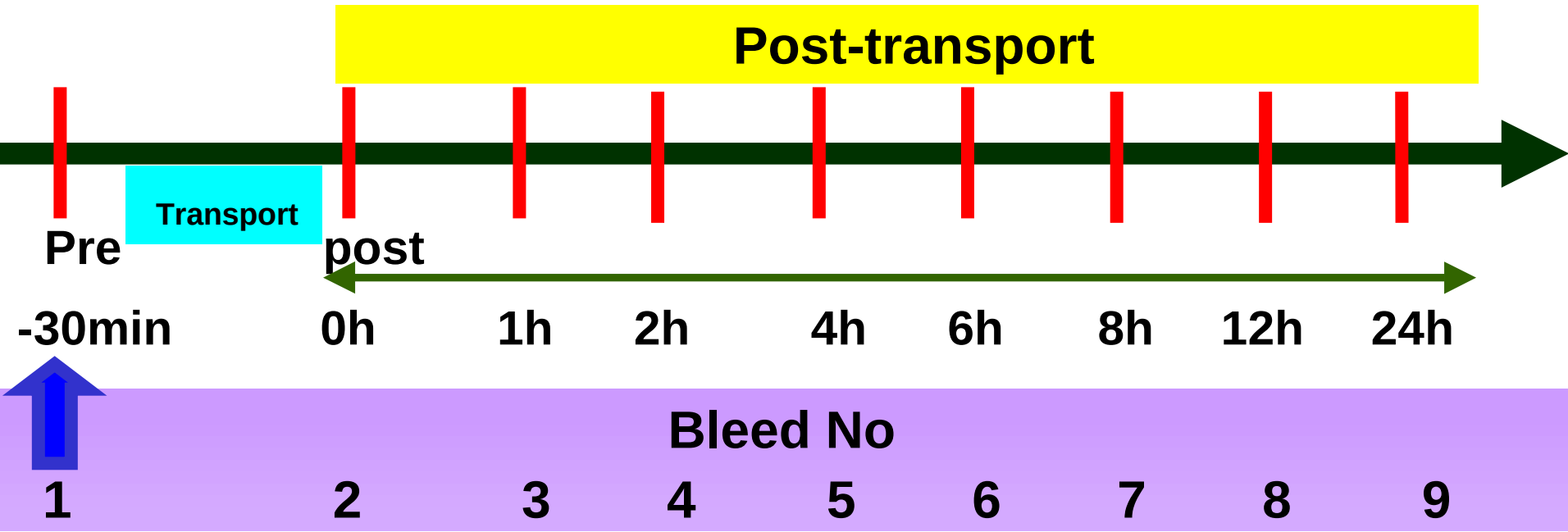
- Physiological, haematological and immunological parameters were used to determine the welfare status of animals, before, during and after the respective transport journeys.

Experimental Design

Animals were **blood sampled** to provide baseline physiological, haematological and immunological welfare indices **(day 0)**

Rectal body temperature taken before transportation (day 0) and after.

Liveweights before transportation (day 0) and at 4, 12 and 24h post-transport.



Materials and Methods

Blood samples were collected by jugular venipuncture before, immediately after and at 1, 2, 4, 6, 8, 12 and 24h.

Bulls were weighed before, immediately after, and at 4, 12 and 24h.

Statistics

Data for liveweight and physiological variables were analysed by ANOVA using PROC GLM repeated measures option in SAS/STAT®.

A paired t-test or Wilcoxon where appropriate was used for the difference between sampling periods.

Water intake (litres) per animal in the 24 hour period after different transport journey times (J)

J	Water intake (L) on truck	Distance (km)	Post - Transport (intake) 0- 4 h	5 - 12 h	13 - 24 h
24 h	3.9 L	1192	9.0	7.0	1.0
18 h	1.8 L	902	5.5	7.0	3.0
12 h	0.0 L	582	8.5	6.5	4.0
9 h	8.0 L	435	11.5	1.5	6.0
6 h	5.0 L	280	8.0	3.5	0.5
Controls	4.1 L	0	20.2	4.5	0.0

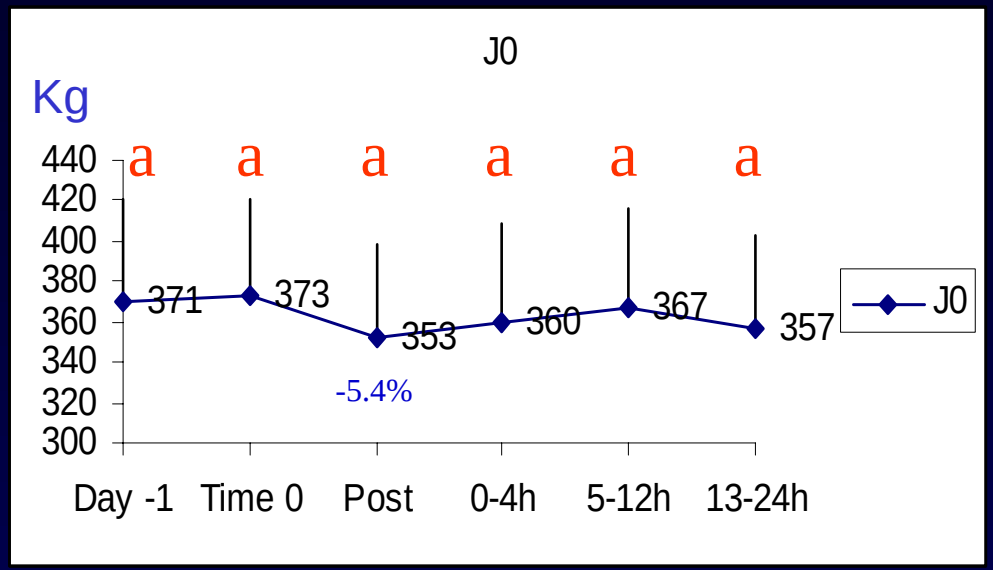
n = 12 bulls per treatment - average weight ~367kg

Mean Liveweight (kg) ± SD in control and transported animals prior to and in the 24 hour period after different transport journey durations (J) in hours (0, 6, 9, 12, 18 and 24) (n = 12 bulls per treatment).

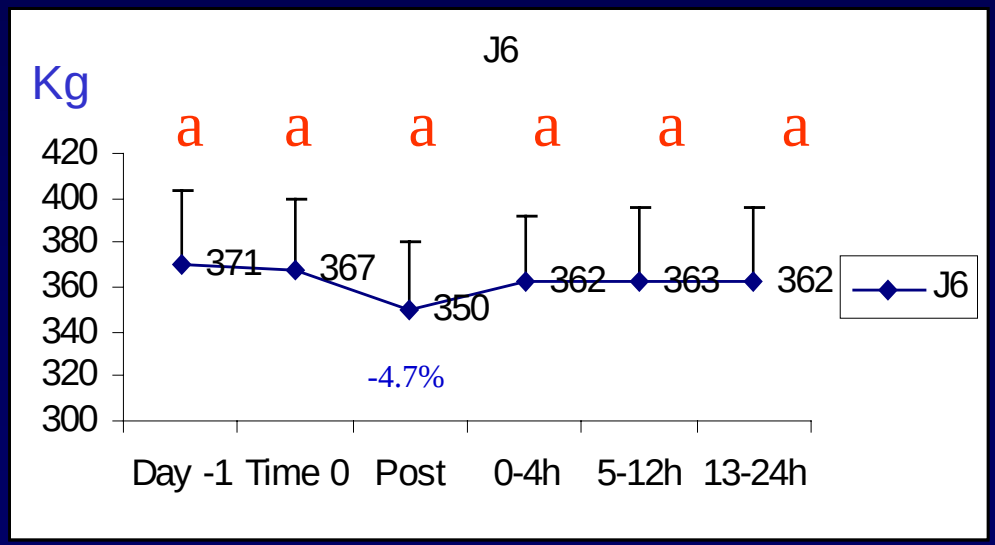
		Transport		Transport		
Journey	Day -1	Time 0	Time post	0 - 4h	5 - 12h	13 - 24h
J0	371 50	373 48	353 46	360 48	367 49	357 46
J6	371 33	367 32	350 30	362 30	363 33	362 33
J9	369 50	362 51	346 48	359 48	355 49	361 50
J12	368	367	346	361	360	366
J18	365 27	364 26	340 23	346 24	350 25	349 26
J24	363 21	360 21	333 20	346 20	355 22	353 21

	Pre-baseline	Post-transport	24 hour recovery post -transport journey				Loss
		Liveweight loss	0 - 4 h	5 - 12 h	0 - 12 h	13 - 24 h	overall
	%	%	%	%	%	%	%
J0	0.7	-5.4	1.9	1.8	-1.7	-2.7	-3.7
J6	-1.0	-4.7	3.4	0.2	-1.1	-0.5	-2.3
J9	**-1.9**	**-4.5**	**3.7**	**-1.2**	**-2.0**	**1.7**	**-2.2**
J12	-0.2	-5.7	4.1	-0.3	-2.0	1.7	-0.5
J18	**-0.4**	**-6.6**	**1.7**	**1.3**	**-3.8**	**-0.2**	**-4.3**
J24	-0.8	-7.5	4.0	2.3	-1.4	-0.6	-2.8

Mean Liveweight (kg) ± SD in control (J0) and transported animals 6 hr (J6)



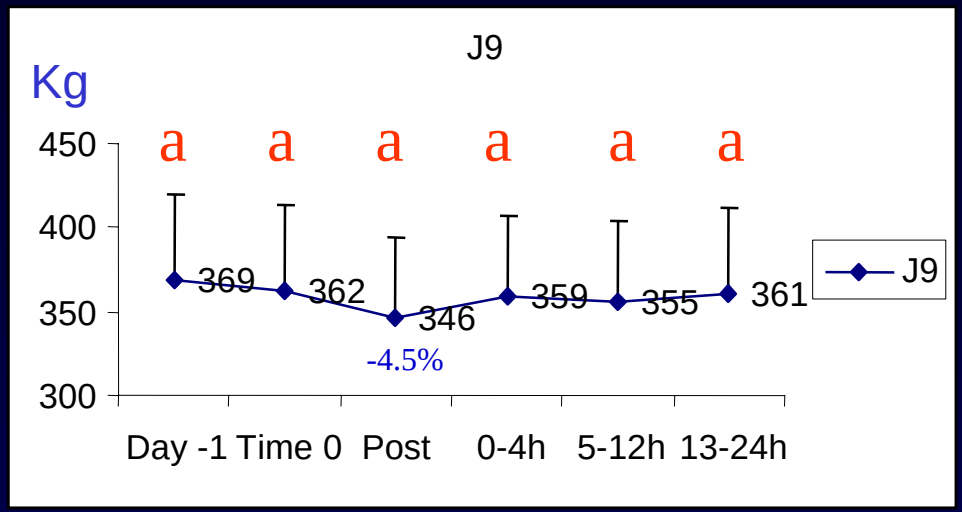
a P ≤0.05



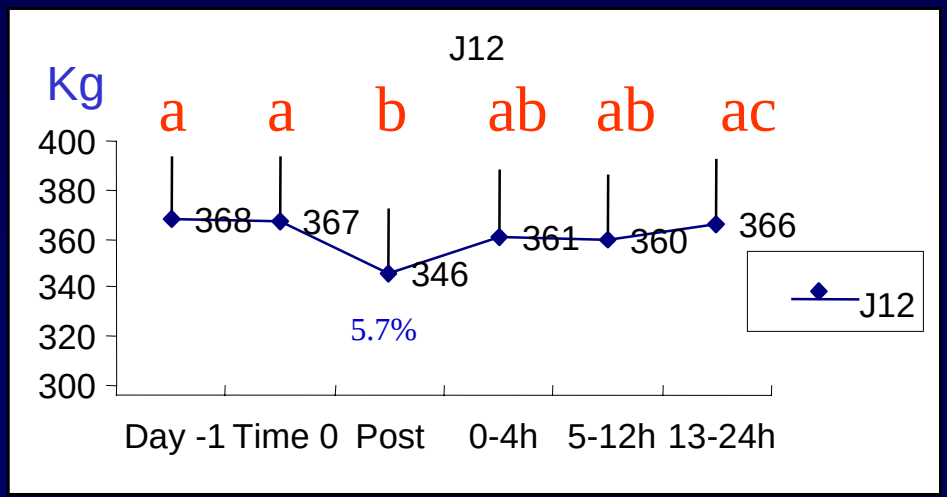
a P ≤0.05

n = 12 bulls per treatment - average weight ~367kg

Mean Liveweight (kg) ± SD in transported animals after 9 (J9) and 12 (J12) hours transport



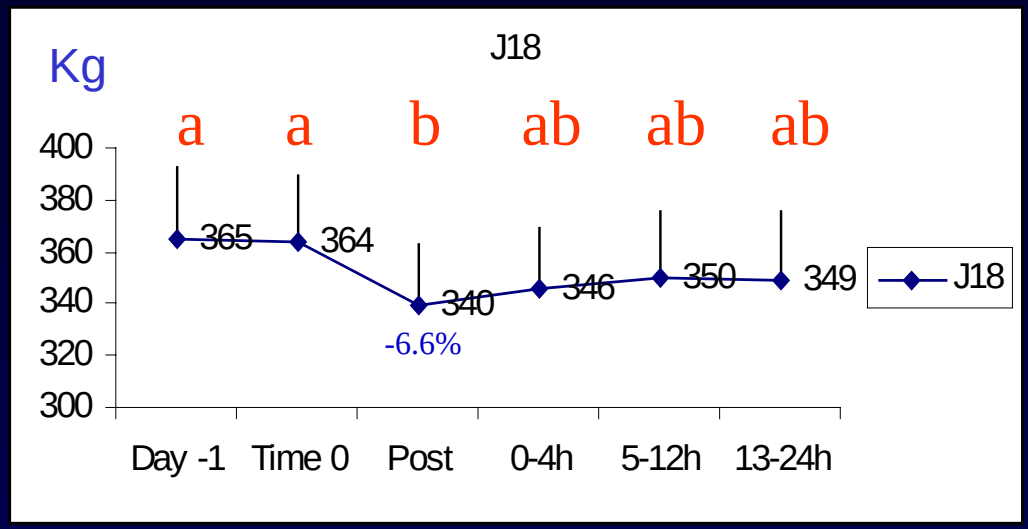
a, b **P ≤0.05**



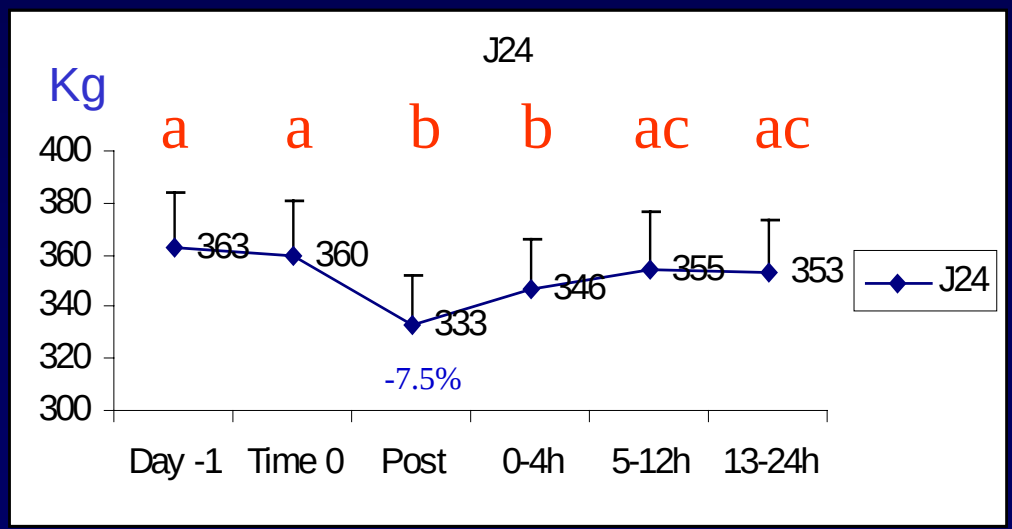
a, b, c **P ≤0.05**

n = 12 bulls per treatment - average weight ~367kg

Mean Liveweight (kg) ± SD in transported animals after 18 (J18) and 24 (J24) hours transport



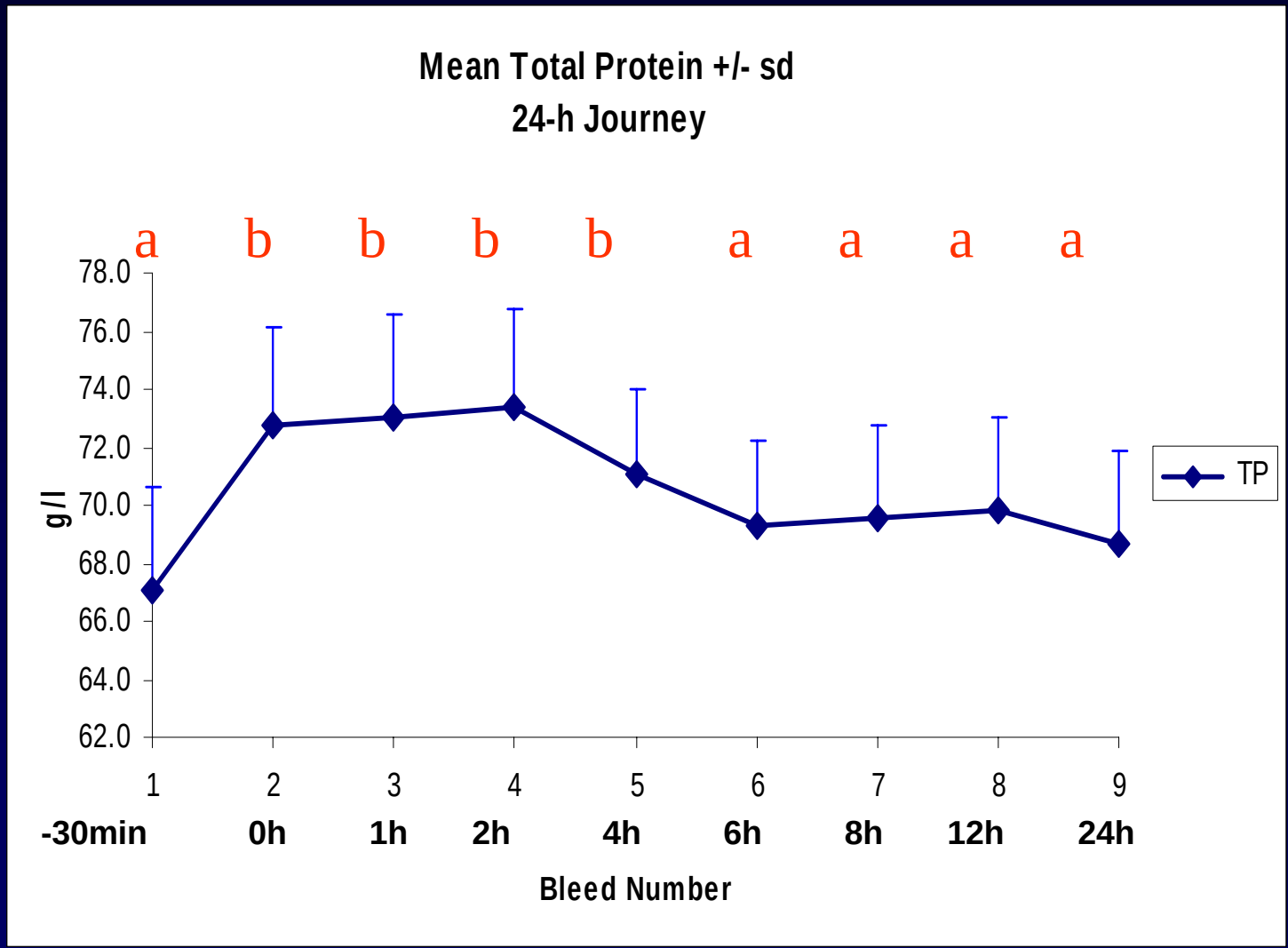
a, b **P ≤0.05**



a, b, c **P ≤0.05**

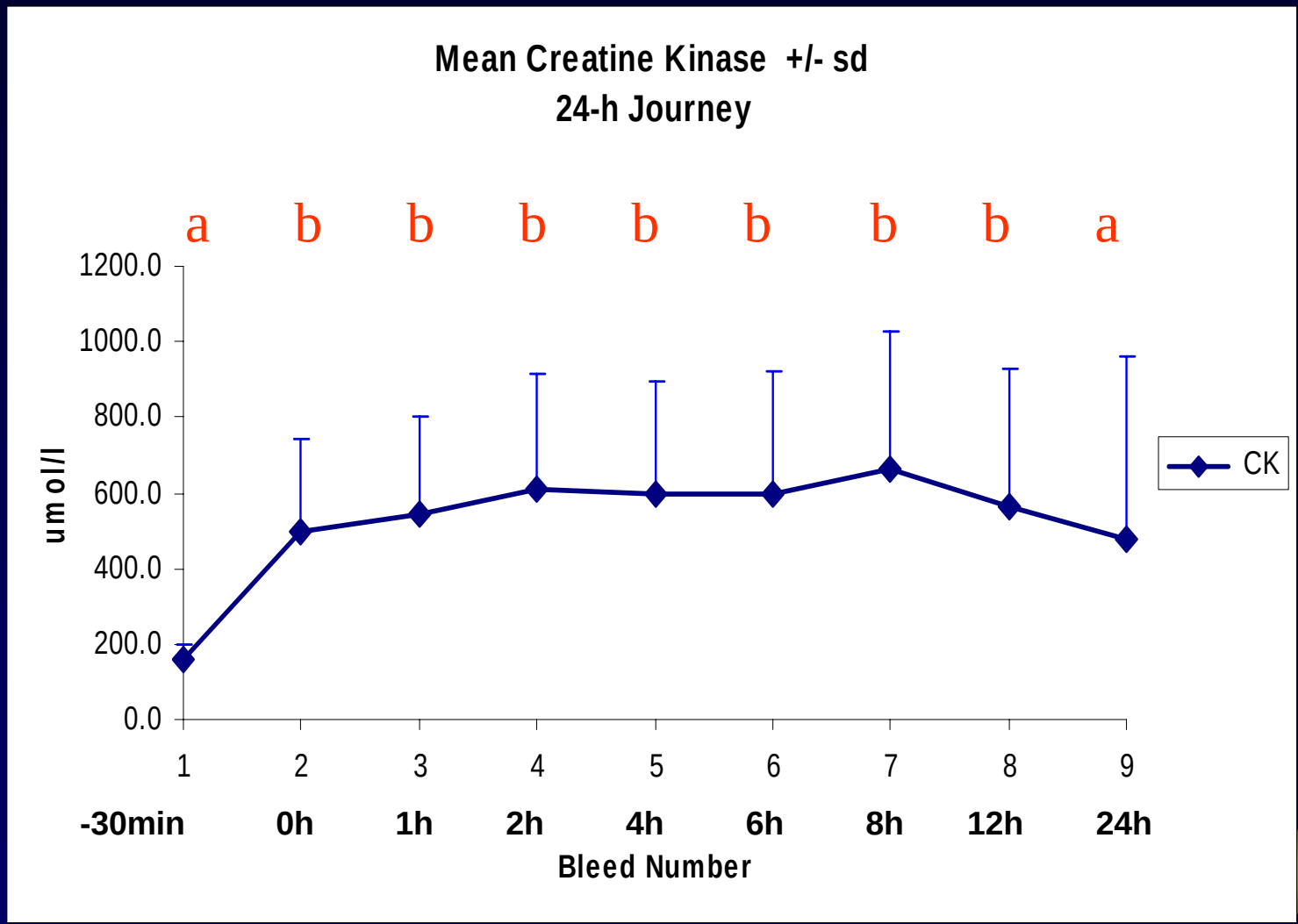
n = 12 bulls per treatment - average weight ~367kg

Mean Total Protein ± SD in transported animals after 24 hours transport



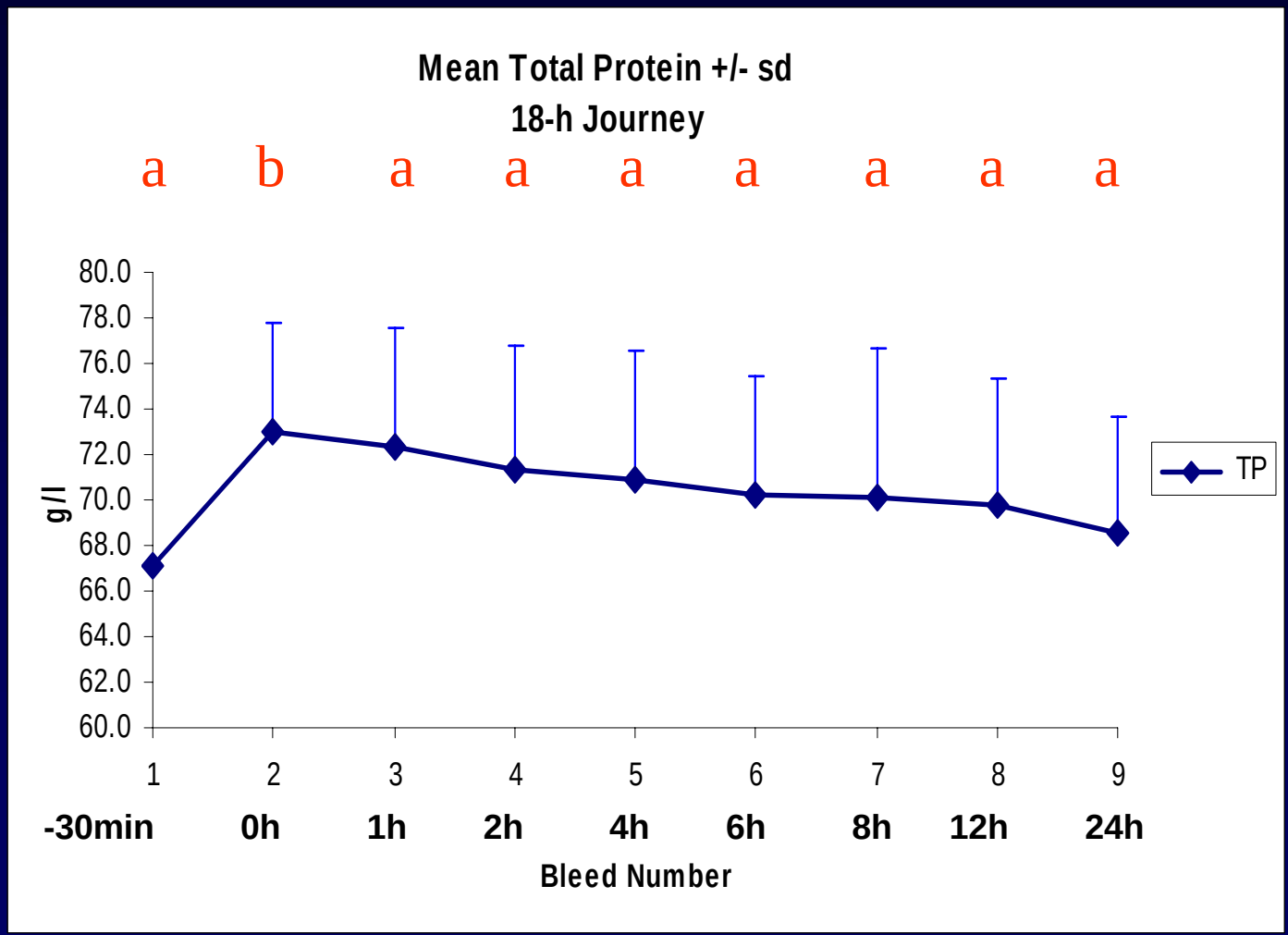
a, b $P \leq 0.05$

Mean Creatine Kinase ± SD in transported animals after 24-h transport



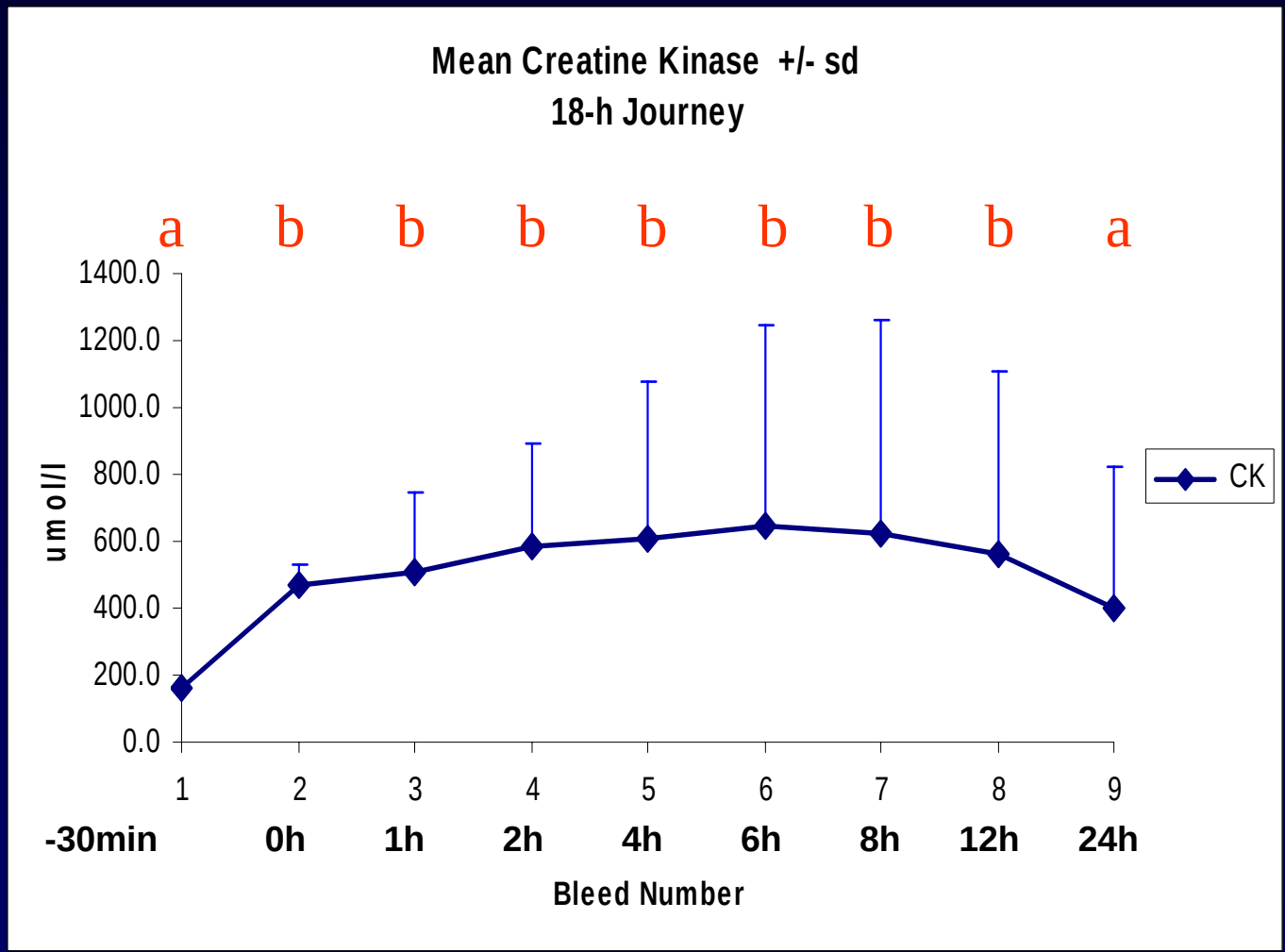
a, b $P \leq 0.05$

Mean Total Protein ± SD in transported animals after 18-h transport



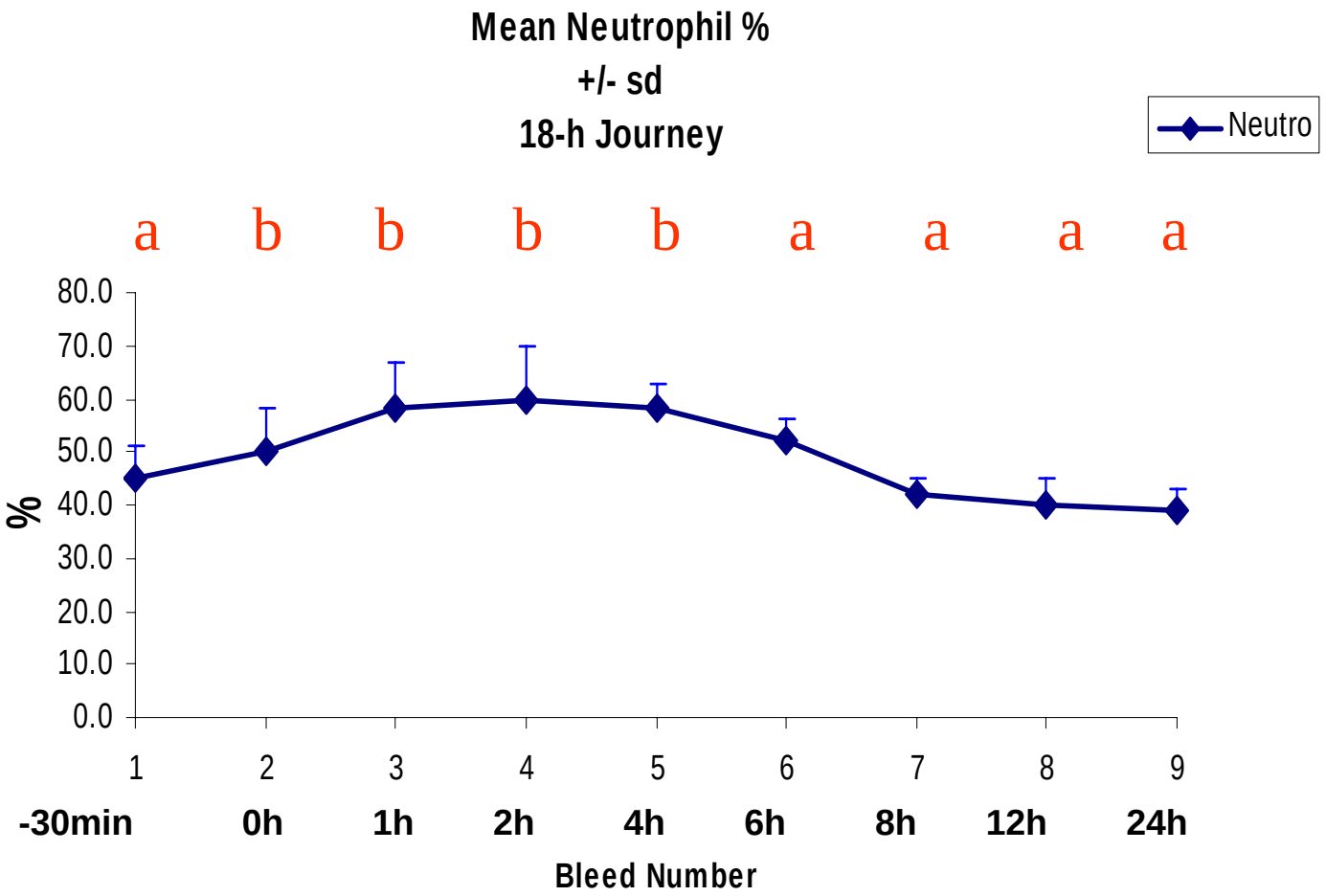
a, b $P \leq 0.05$

Mean Creatine Kinase ± SD in transported animals after 18-h transport



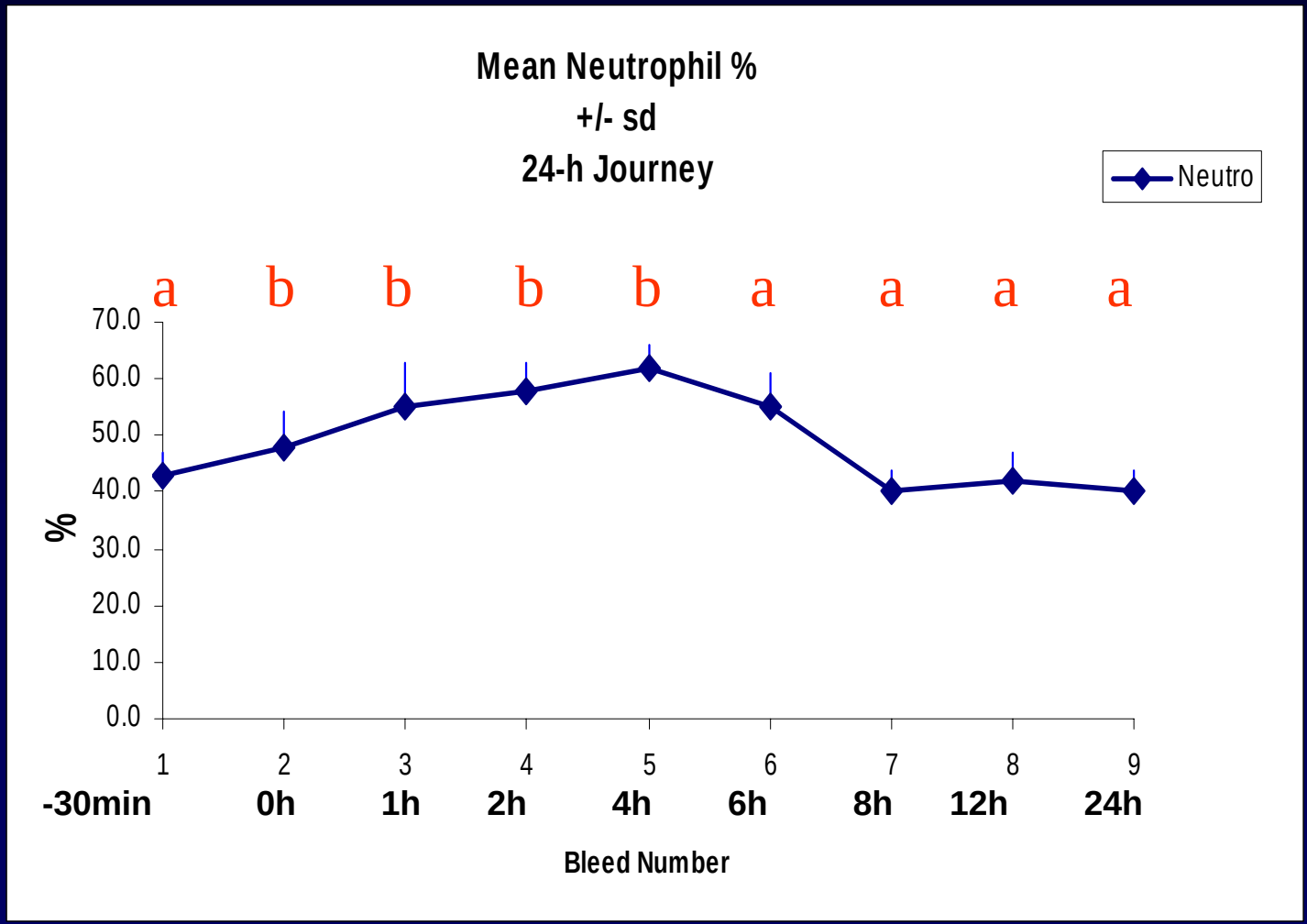
a, b $P \leq 0.05$

Mean Neutrophil % ± SD in transported animals after 18-h transport



a, b $P \leq 0.05$

Mean Neutrophil % ± SD in transported animals after 24-h transport



a, b **P ≤0.05**

Results

Bulls travelling for 6, 9, 12, 18 and 24h lost 4.7, 4.5, 5.7 (P= 0.05), 6.6 (P= 0.05) and 7.5 (P= 0.05) percentage liveweight compared with baseline.

During the 24h recovery period liveweight was regained to pre-transport levels.

Results

Lymphocyte percentages were lower (P= 0.001) and neutrophil percentages were higher (P= 0.001) in all T animals.

Blood protein and creatine kinase concentrations were higher (P= 0.001) in the bulls following transport for 18 and 24h and returned to baseline within 24h.

Conclusion

Liveweight, physiological and haematological responses of bulls returned to pre-transport levels within 24h having had access to feed and water.

Transport of bulls from 6 – 24 hours did not impact negatively on animal welfare.