63rd Annual Meeting
EAAP 2012
August 27th - 31st, 2012

ISTITUTO G. CAPORALE
TERAMO

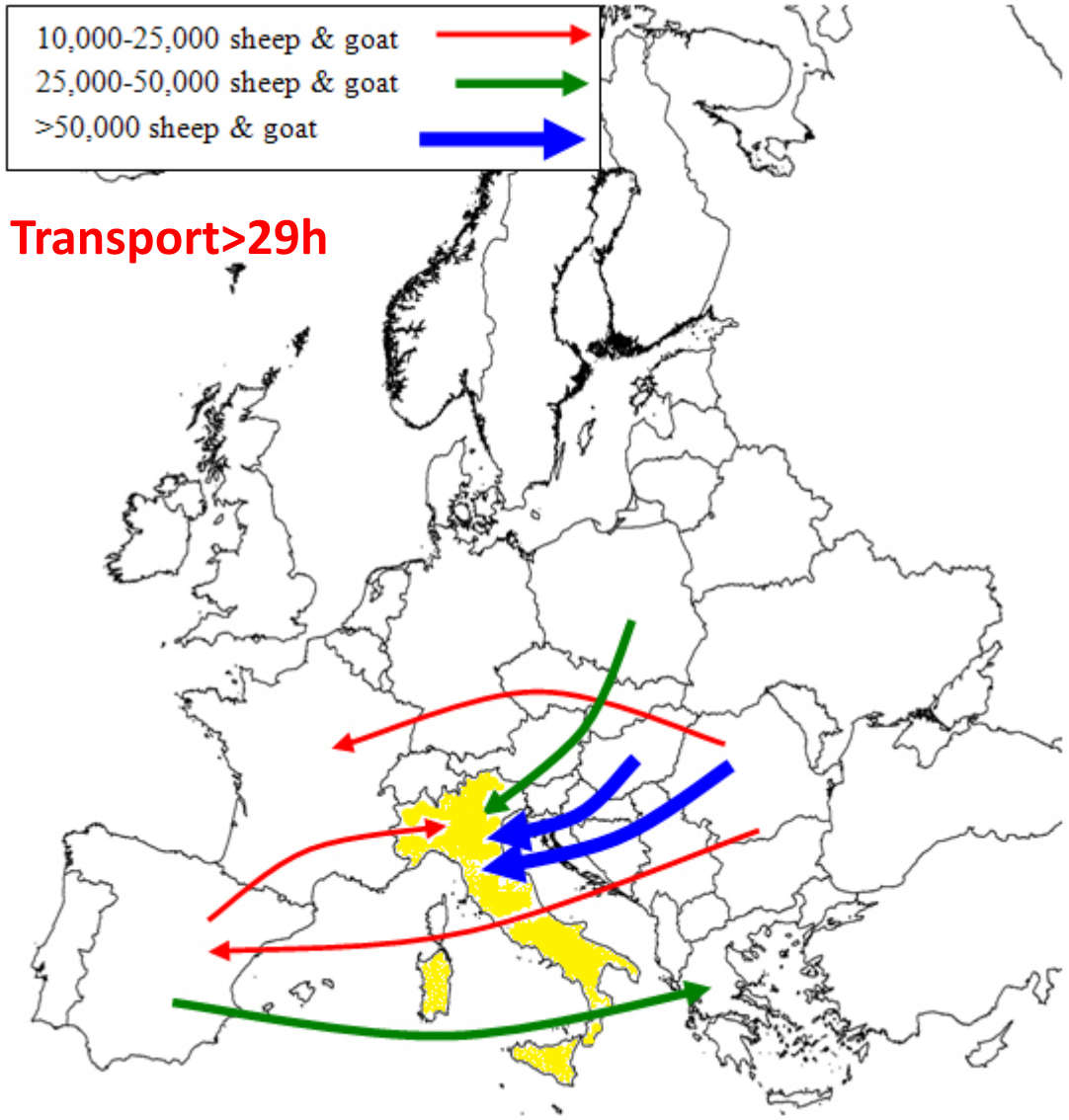
ADVANTAGES OF CONTROL POSTS: COMPARISON BETWEEN UNLOADED AND NOT UNLOADED SHEEP DURING RESTING TIME

Stefano Messori[1], Cecilia Pedernera[2], Bernardo Catanese[1], Pedro Rodríguez[2], Antoni Dalmau[2], Shanis Barnard[1], Diego Magnani[2], Antonio Velarde[2], Paolo Dalla Villa[1]

[1] Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise «G. Caporale", Campo Boario, Teramo, Italia
[2] IRTA-Monells, Institut de Recerca i Tecnologia Agroalimentàries, Monells, Girona, España

ISTITUTO G. CAPORALE
TERAMO

Sheep transport in the EU



- 95 million sheep transported/year in EU (2009)
  - More than 60% travels over long journeys
- Italy is the main importing Country (50-60%)

Source: TRACES, 2009

ISTITUTO G. CAPORALE
TERAMO

Regulation (EC) n°1/2005

Provides for maximum journey durations for every species.

After the specified journey time animals must be unloaded, fed and watered, and have rest for at least 24 hours.

The unloading of the animals must be carried out in authorized staging points (Control Posts (CPs)).

Regarding sheep, the Regulation **requires** a 24h stop after a maximum of 29 hours of travel.

Impact of transport on animal welfare

- When animals are transported they are potentially exposed to a number of factors that could result in animal welfare problems (Cockram et al., 1996).
- Long journeys have a greater impact on animal welfare than shorter ones (e.g. because of longer food and water deprivation) (Knowles et al., 1995).
- The provision of resting time out of the truck during long journeys has been considered to be fundamental to protect animal welfare and hence included in the Regulation.

But..

The usefulness of lairage during long journeys is debated:

- When conditions are optimal, most healthy and fit farm animals could possibly be exposed to long transport durations without necessarily compromising their welfare (Nielsen et al., 2011).
- Interrupting a journey to provide a period of rest and the provision of food and water might not, in some circumstances, provide better welfare to the animals.
  - For example the loading-unloading of the animals and lairage in a **novel environment** might result in greater injury and stress than completing the journey without a stop (Cockram et al., 1997).
- Compared with other farmed species, sheep are particularly tolerant of being transported (Knowles, 1998).

..and..

The unloading of animals to provide rest may not be advisable:

- **Loading and unloading** of animals (including sheep) have been identified as the most stressful part of transport (Trunkfield and Broom, 1990; Knowles, 1995; Grandin, 1997).
- Some research has found positive effects of lairage (e.g. Cockram et al., 1997) but the animals were offloaded into familiar pens instead of novel environments.
- Both lambs and adult sheep lie down during transport and consequently it is assumed that the animals are able to rest also inside the truck (Cockram et al., 1997; Cockram, 2007).

Aim

To compare the welfare benefits of rest on-board the truck or in CPs for sheep transported long distances.

ISTITUTO G. CAPORALE
TERAMO

Experimental design: Animals

Dairy sheep farm in the South of Italy (Apulia region)
41°7´0”, 16°29´0”

72 Comisana ewes (same flock) → 3 groups of 24 animals, uniform for weight and age

C — Control group: Farm

P8 — 29h Transport → 8h CP

T8 — 29h Transport → 8h Truck

ISTITUTO G. CAPORALE
TERAMO

Experimental design: Transport

Semitrailer authorized for livestock transport over long distances (type II).

As for commercial transport,
trunk roads were used for the majority of the journey

All transported groups (P8 and T8) were loaded on the **same deck.**

The deck had been previously divided into equal areas: mean space allowance **0,27 m²** (law requirements between 0,2 and 0,3m²).

Water was made available for the whole journey.

ISTITUTO G. CAPORALE
TERAMO

Experimental design: Rest

Authorized Control Post “Fratelli Siciliani” (authorization CE 07/PS).

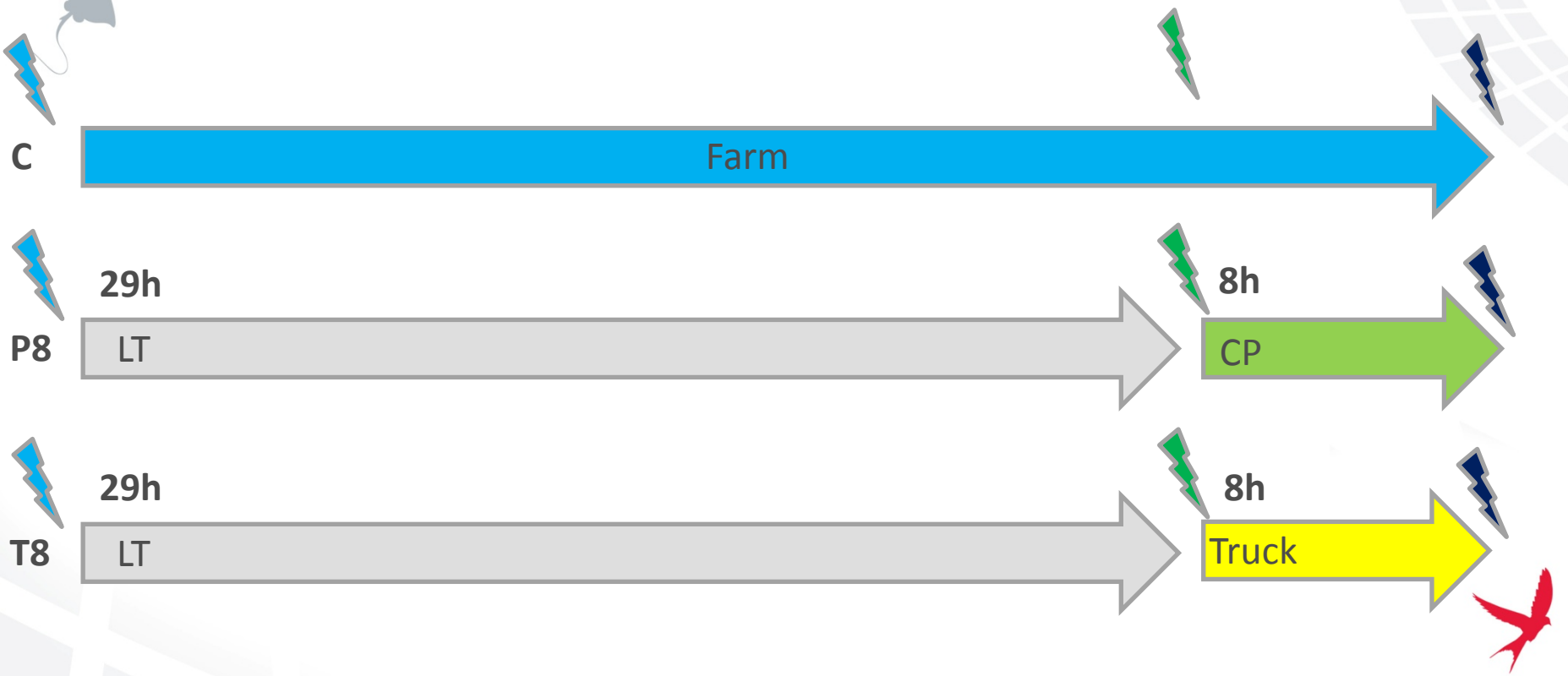
All animals were fed and watered and underwent an 8 h stop.

Group P8 was unloaded and housed in a pen

Group T8 was not unloaded and stayed inside the truck

ISTITUTO G. CAPORALE
TERAMO

Sampling (blood & saliva)



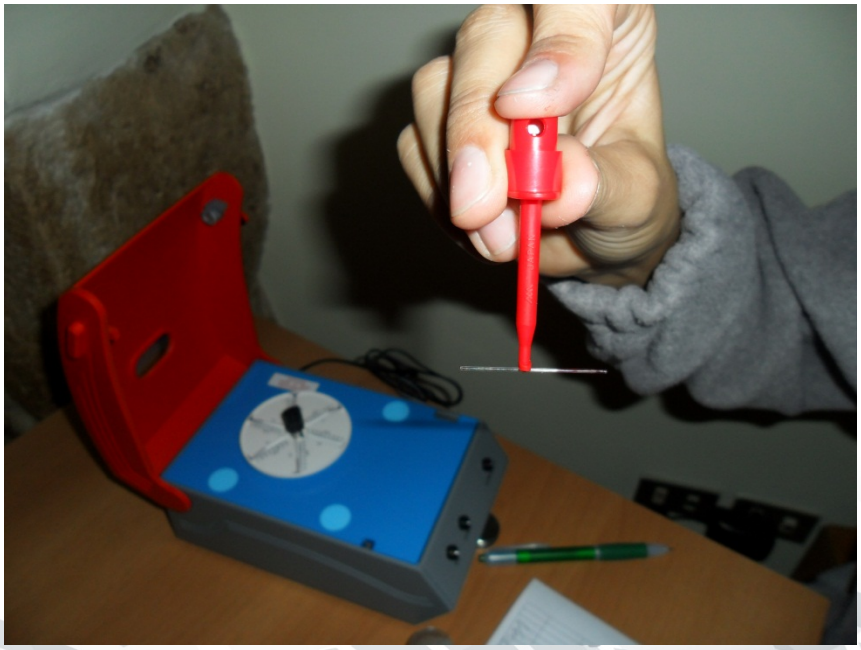
t0= 3 days prior transport
t1= at arrival at CP
t2= at departure from CP

ISTITUTO G. CAPORALE
TERAMO

Sample analyses

Serum:
BUN/creatinine ratio, CK, GOT, LDH

Saliva:
salivary cortisol



Full blood:
haematocrit

ISTITUTO G. CAPORALE
TERAMO

Behavioural observations

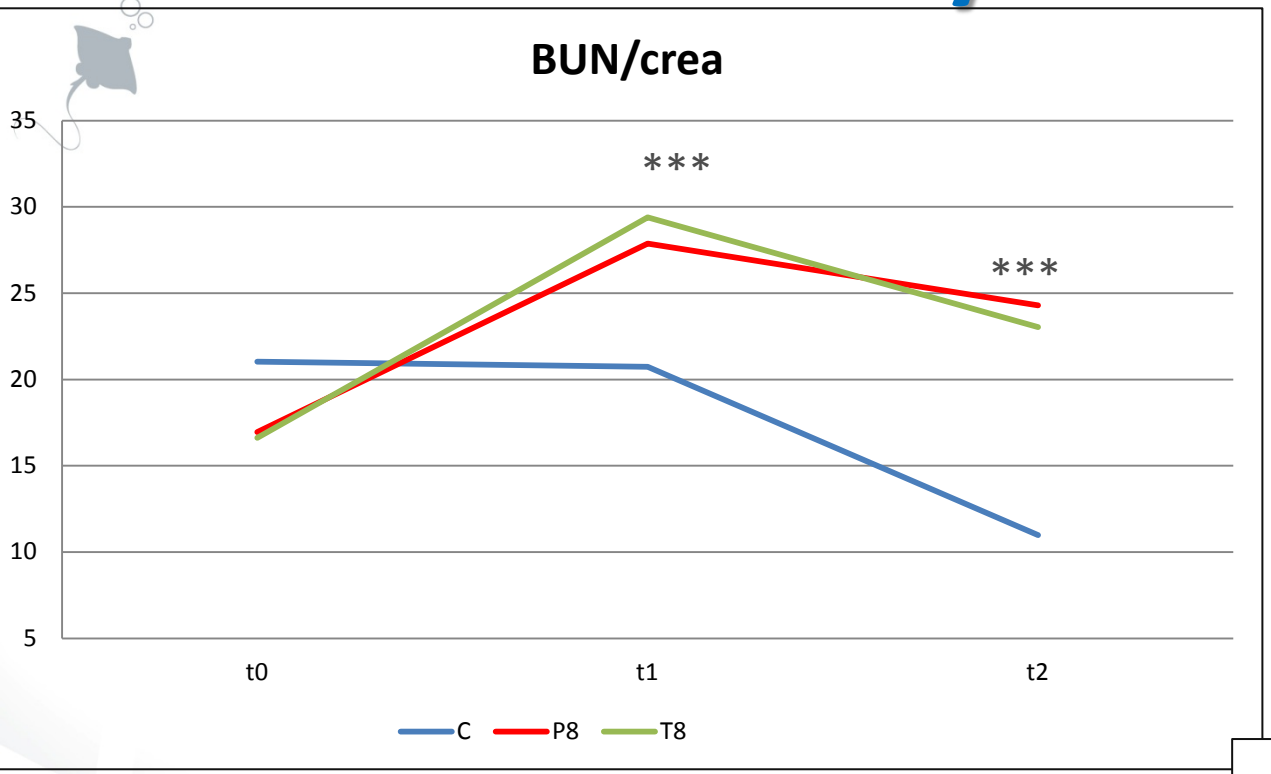
4 recorded behaviours

- standing,
- resting,
- moving
- eating.

The behaviour of each group was video recorded during the 8h rest stop, and later analysed by instantaneous sampling every 5min.

ISTITUTO G. CAPORALE
TERAMO

Dehydration

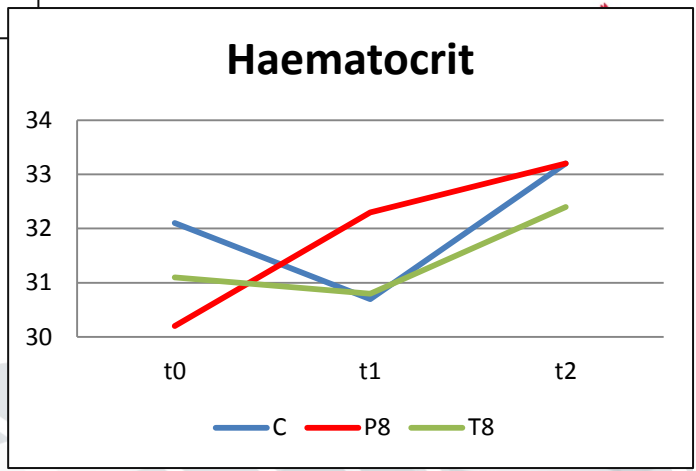


BUN/creatinine ratio was higher in both transported groups after travel and after the rest stop

No differences were observed between the two transported groups at any time point.

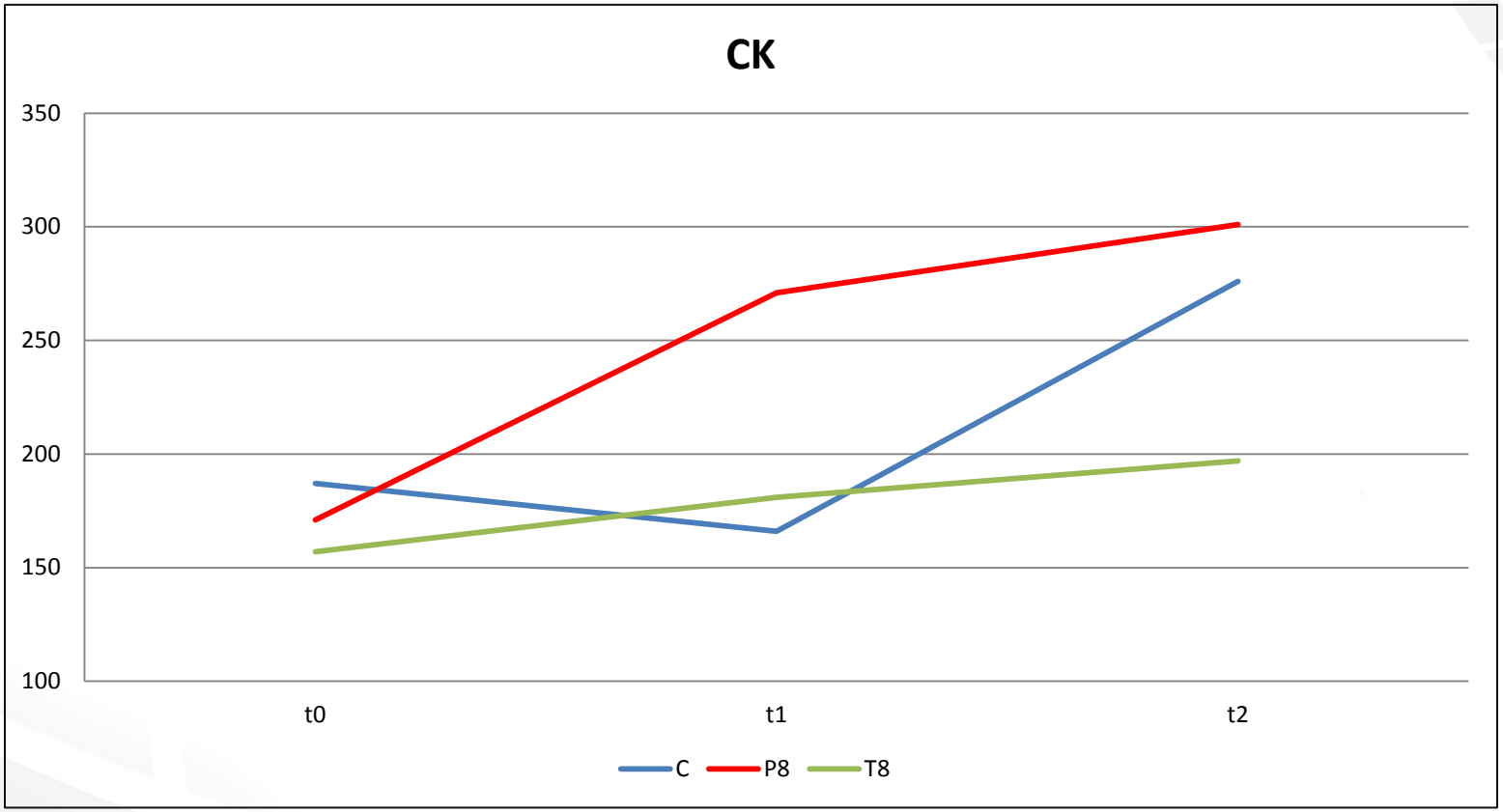
*** p<0.001

No differences in haematocrit were observed between groups in any moment.



ISTITUTO G. CAPORALE
TERAMO

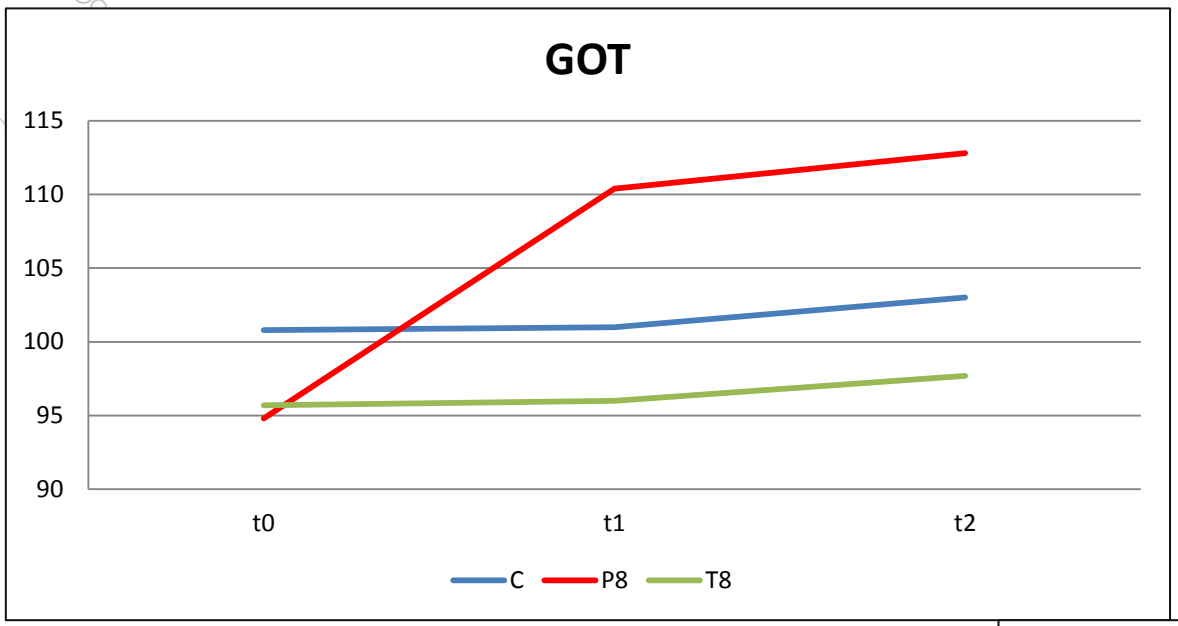
Muscular exertion/damage



No significant differences in CK plasmatic concentration were observed among groups, suggesting no detrimental effect of transport or unloading

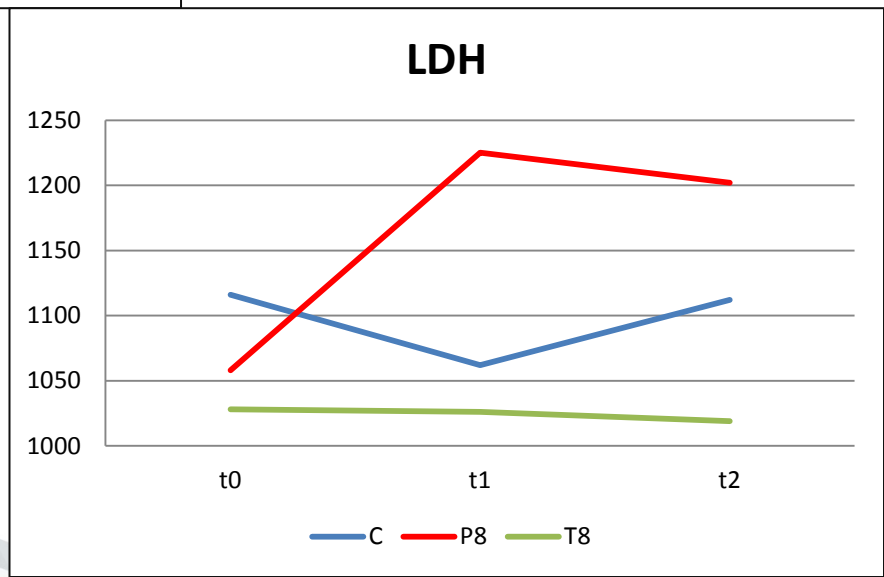
ISTITUTO G. CAPORALE
TERAMO

Cellular damage



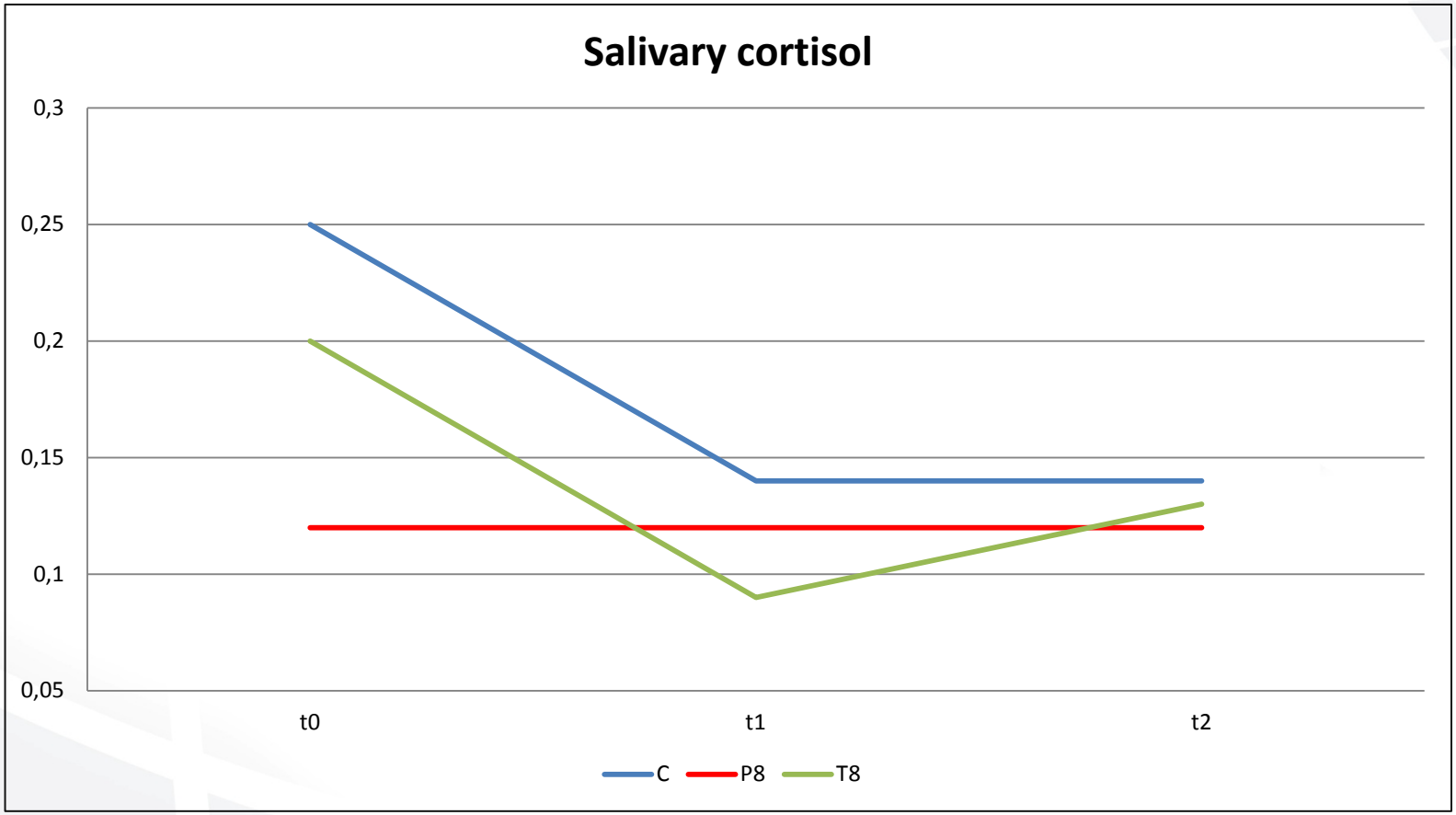
GOT and LDH plasma concentration have similar patterns.

In no case did the differences reach statistical significance.



ISTITUTO G. CAPORALE
TERAMO

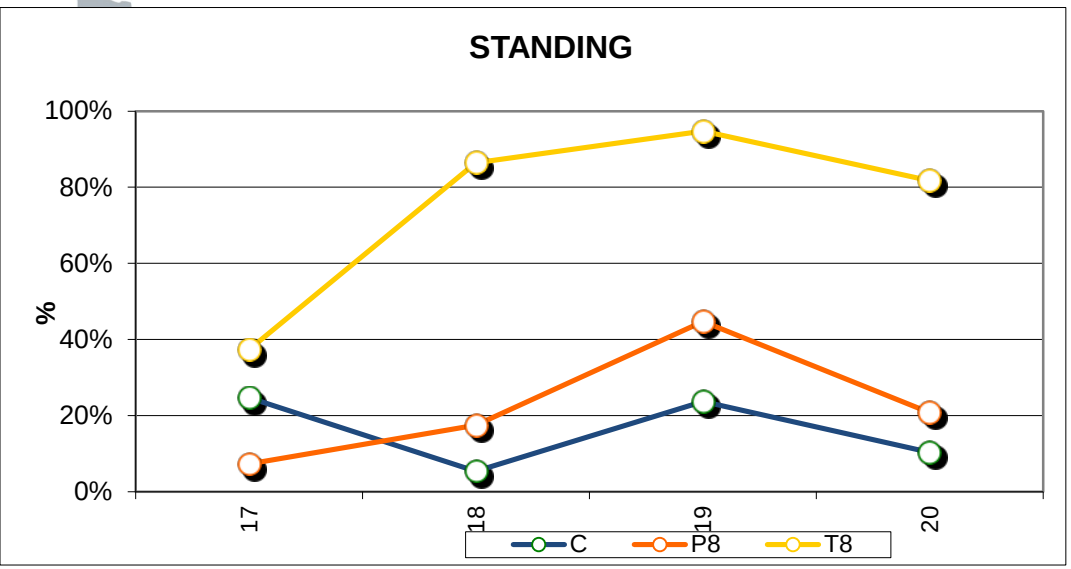
Stress (salivary cortisol)



No significant differences in salivary cortisol concentration were observed among groups

ISTITUTO G. CAPORALE
TERAMO

Behaviour during rest stop

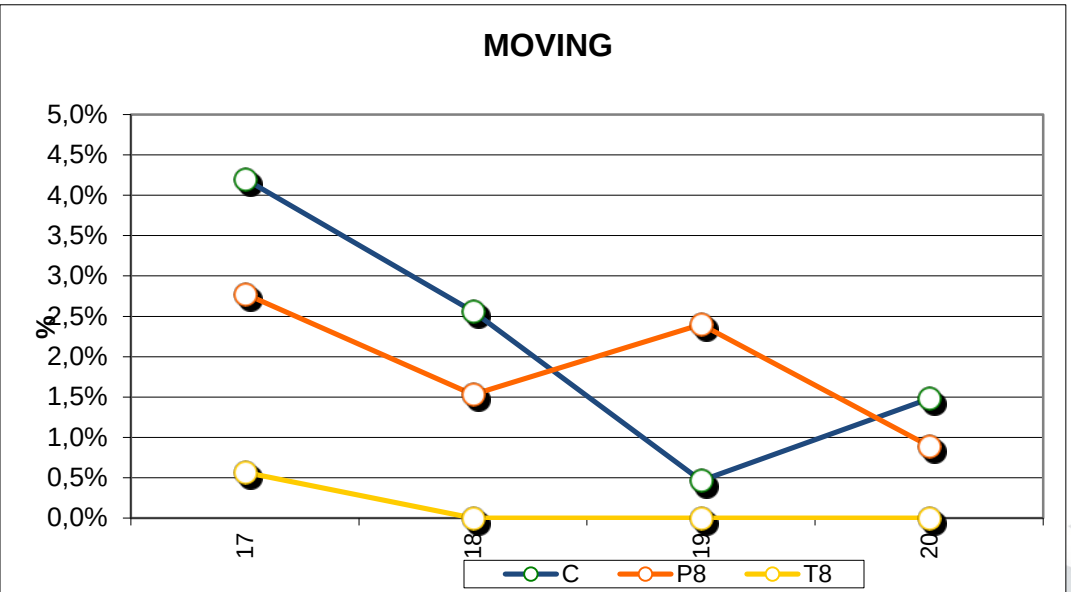


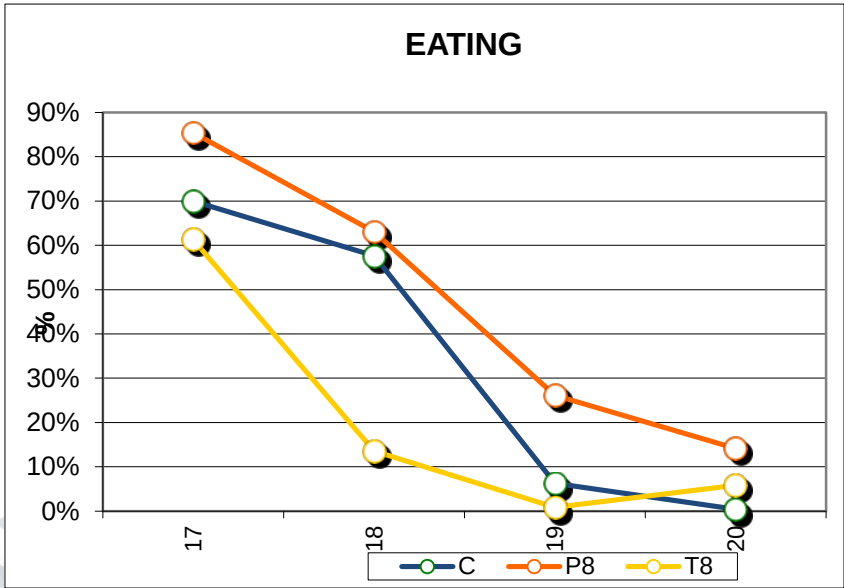
No differences between P8 and C.

Group T8 spent more time **standing** and less time **moving** than C ($p<0.05$).

Group T8 also spent less time **eating** than group P8 ($p<0.05$).

No differences were observed on **resting** time among groups.





Conclusions

Resting animals on trucks or in CPs during stops on long journeys did not appear to have any adverse effects on physiological indicators of stress or muscular exertion.

There was no difference between resting on trucks or in CPs.

The animals appeared more settled in the CPs compared to on trucks as there was less standing and more eating in the CPs.

These differences are indicative of poorer welfare associated with rest on trucks.

Hence, these preliminary results suggest that leaving adult sheep on the truck during the stop provided by the Regulation 1/2005 during long journeys is not advisable from an animal welfare point of view.

ISTITUTO G. CAPORALE
TERAMO

..but..

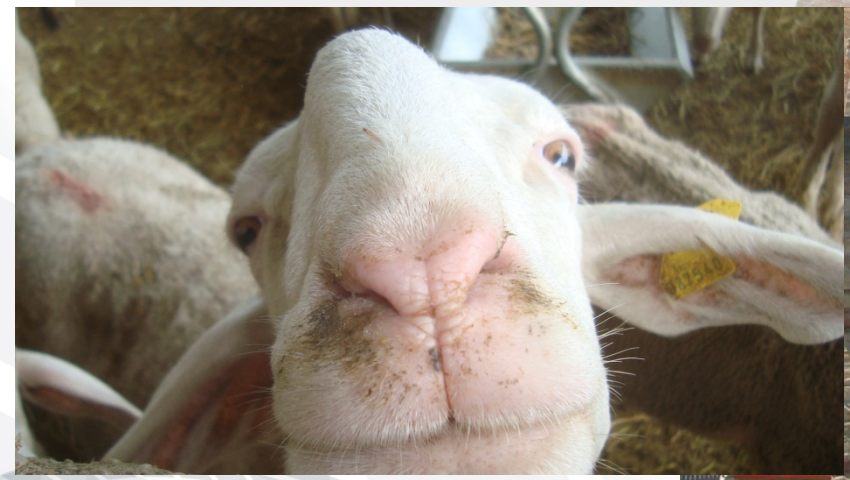
- Animals that stop in CPs in practice undergo to a further transport.
- This may have consequences on the animals, due to the re-loading of animals and to the travel itself.

..hence..

- The welfare status of the animals should be investigated also after the stop at the CP, during and after this second part of the travel.

ISTITUTO G. CAPORALE
TERAMO

Thank you for your attention



s.messori@izs.it