HoloRuminant
Understanding microbiomes of the ruminant holobiont

Stakeholders Event

November 21st 2024

- Transportation of Young Calves –

STUDY OF THE EFFECT OF TRANSPORT ON BLOOD PARAMETERS IN SUCKLING CALVES

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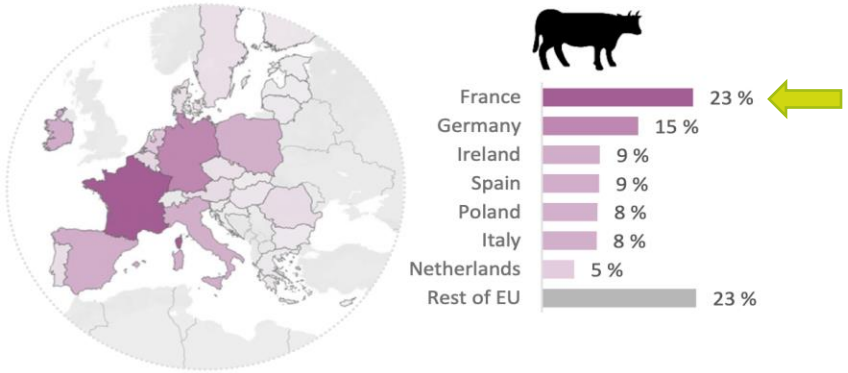
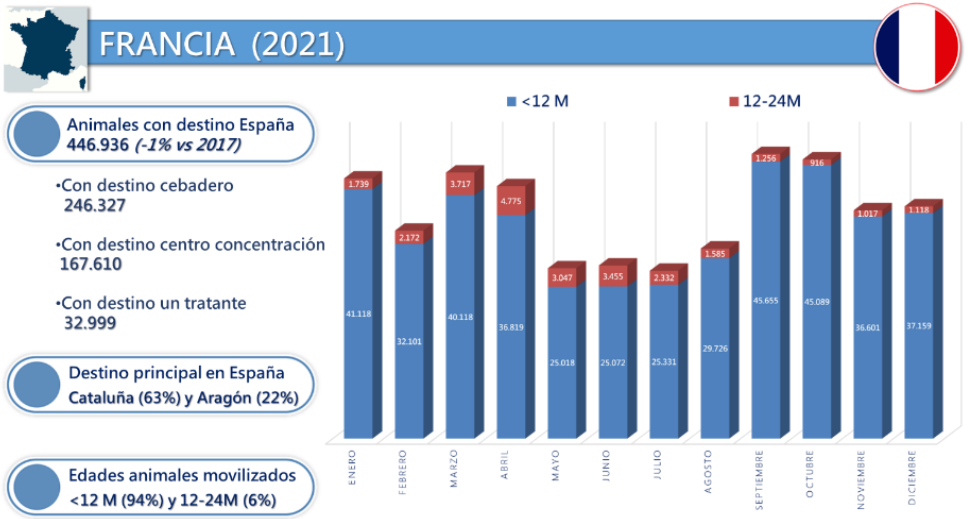
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000213

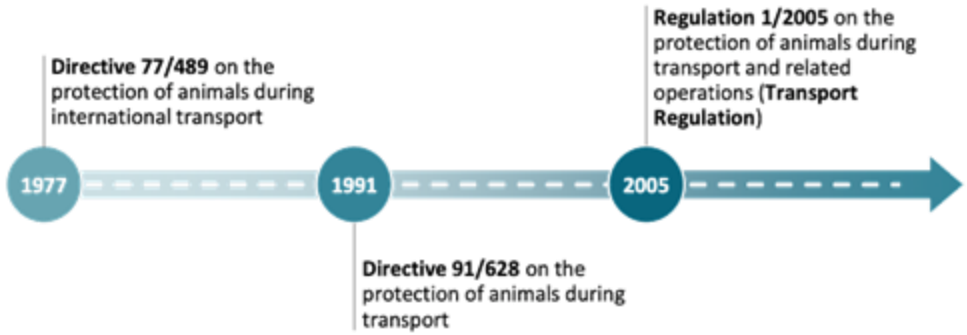
CONTEXT



Cattle exports between Member States in 2021.
Source: ECA, based on Eurostat data.



LEGISLATION



Main EU legislation on animal welfare during transport.

Source: Review 03/2023 Transport of live animals in the EU: challenges and opportunities.

MINISTERIO DE AGRICULTURA, PESCA Y ALIMENTACIÓN

Royal Decree 990/2022 of 29 November on animal health and protection rules during transport.

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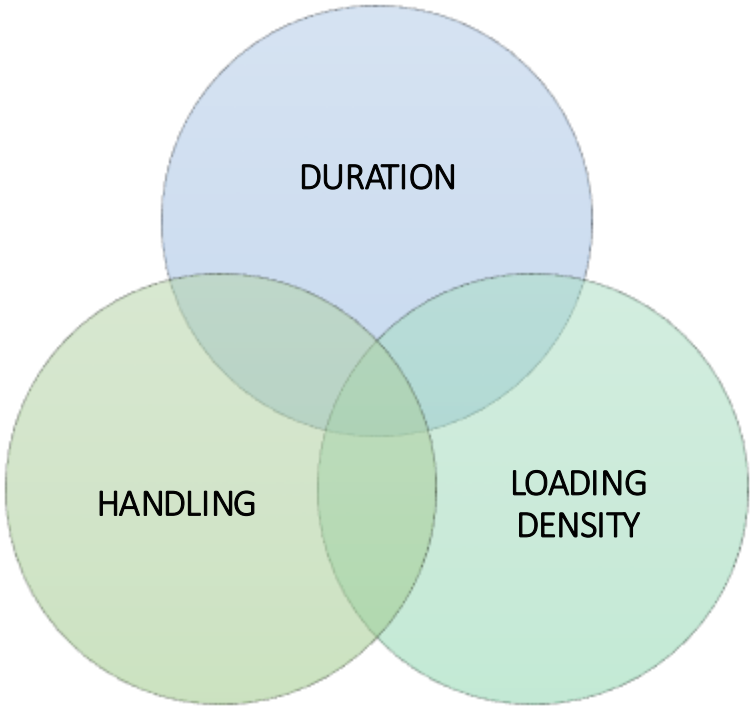
QUALITY OF TRANSPORT



NEGATIVE EFFECTS ON HEALTH

- Respiratory problems
- Dehydration
- Gastrointestinal problems

STRESS

Weakened immune system

Excessive fluid and electrolyteloss

Poorer growth and development.

- ECONOMIC PROFITABILITY

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Reception centre and interior of the transport truck - Les veaux des frères Drevon, France (ORIGIN) – 4 Oct 2022

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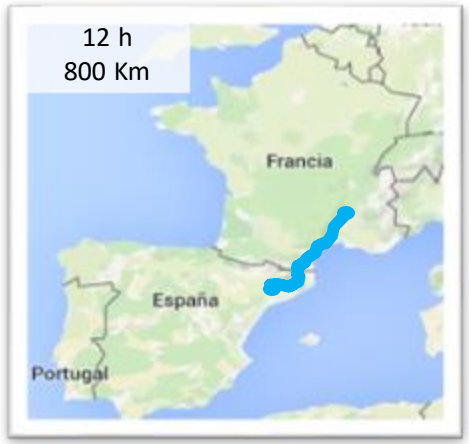
OBJECTIVE OF THE TRIAL

To evaluate the effect of long-term transport in suckling calves on blood parameters.

METHODOLOGY

- *Reception centre – **France***
- *Arrival at the holding - **Spain***



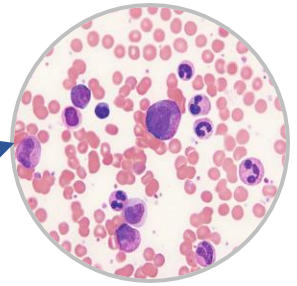
Temperature: 22-25 ºC
Relative Humidity: 30-50 %

n = 66

Jugular puncture

EDTA

Fluoruro Na



Analysis:

- Haematology
- Biochemistry

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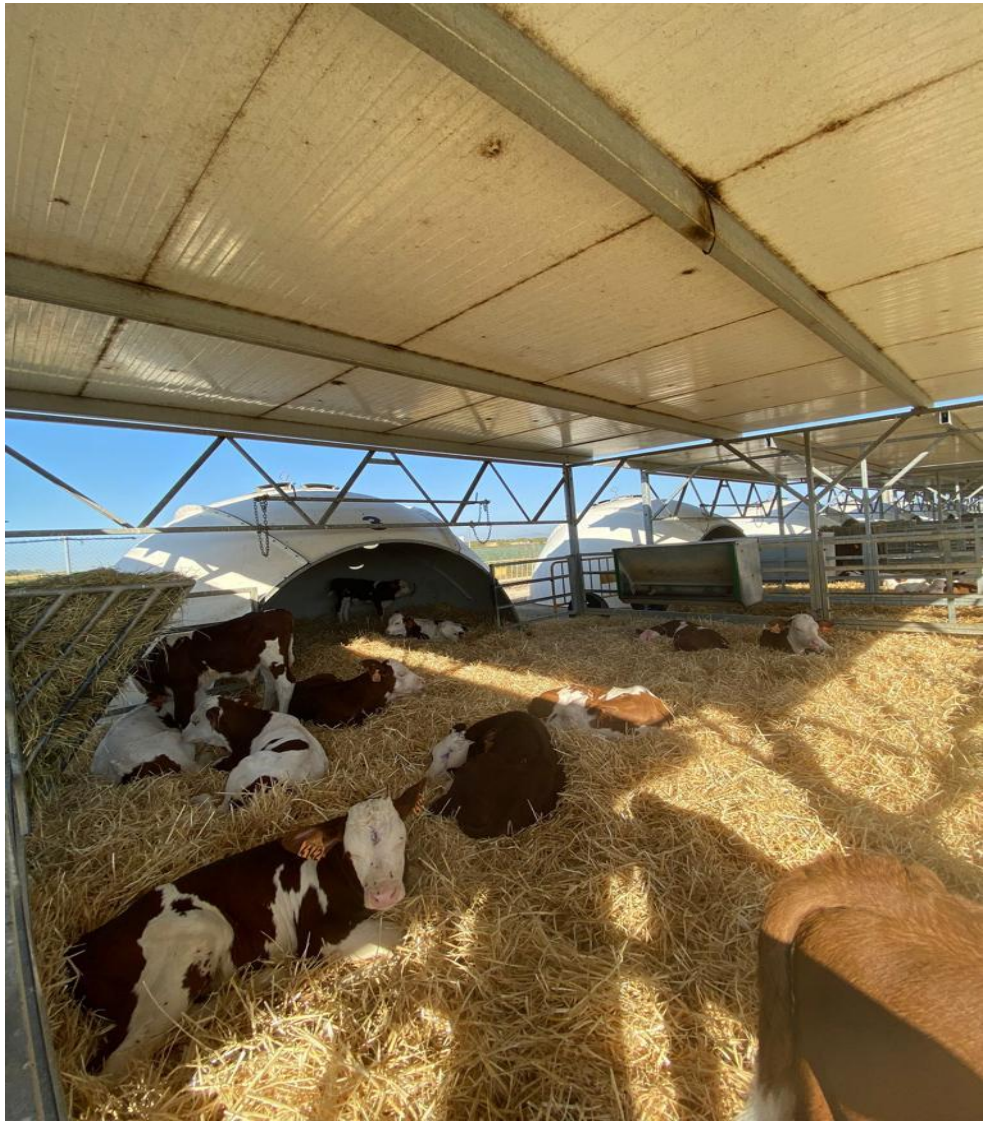

Experimental farm - Ivars d'Urgell, Lleida Spain (DESTINATION) – 5 Oct 2022

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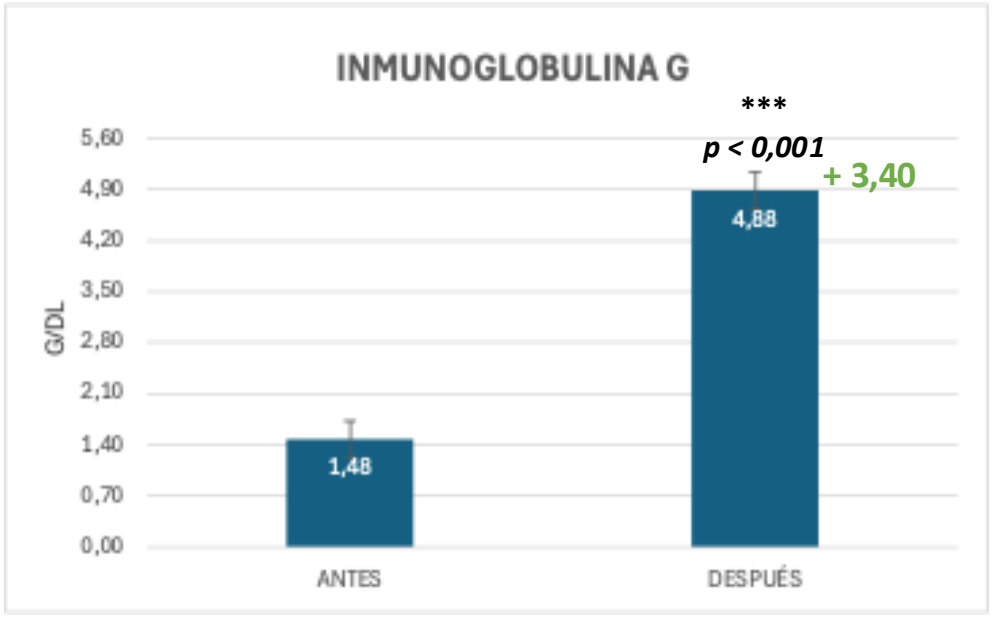
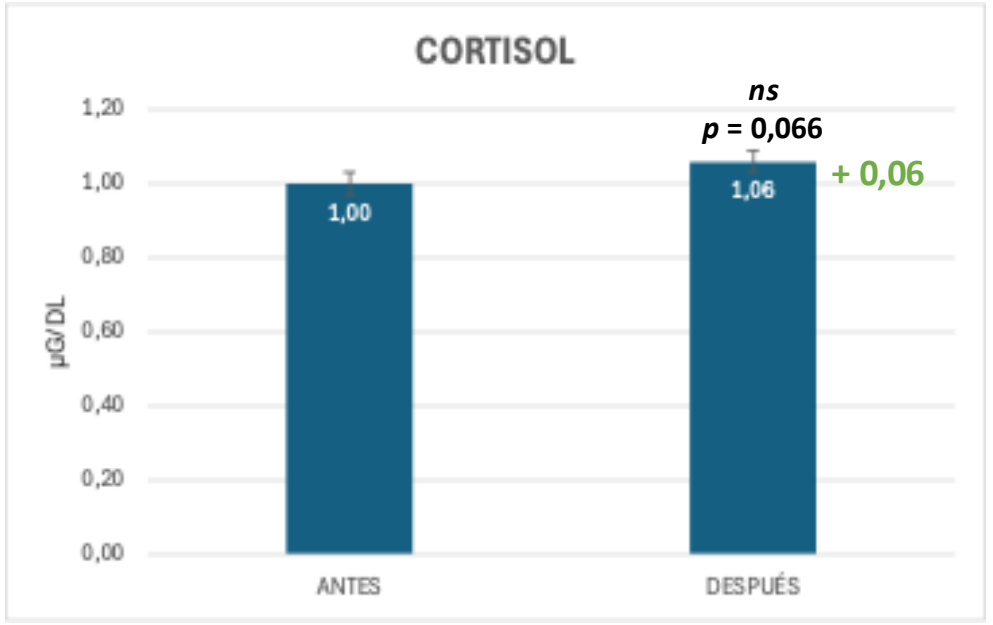
IMMUNE RESPONSE AND STRESS



1,07-3,20 g/dL

Activeimmune response



0,2-1,8 µg/dL

Adaptation to moderate-stress

Rangos fisiológicos de referencia: Kaneko et al. (2008).

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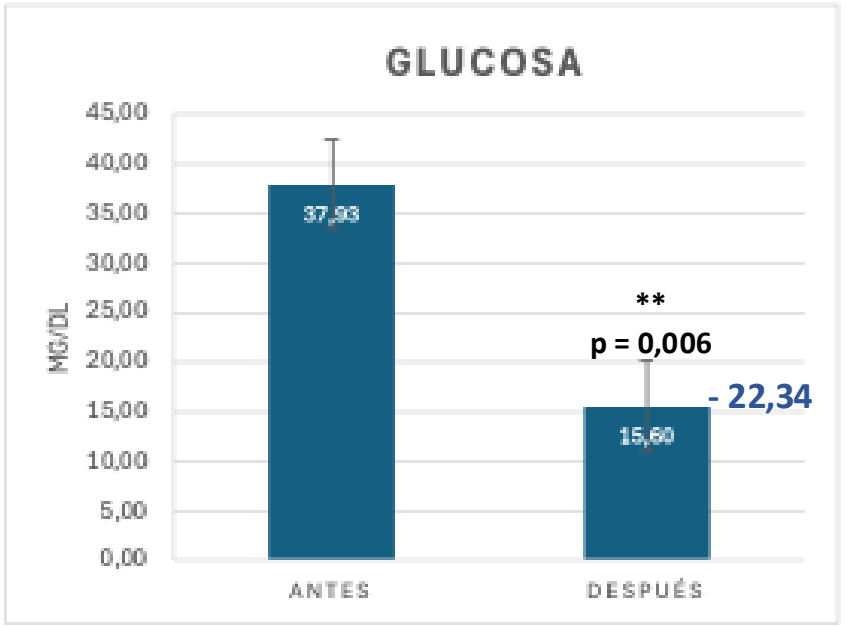
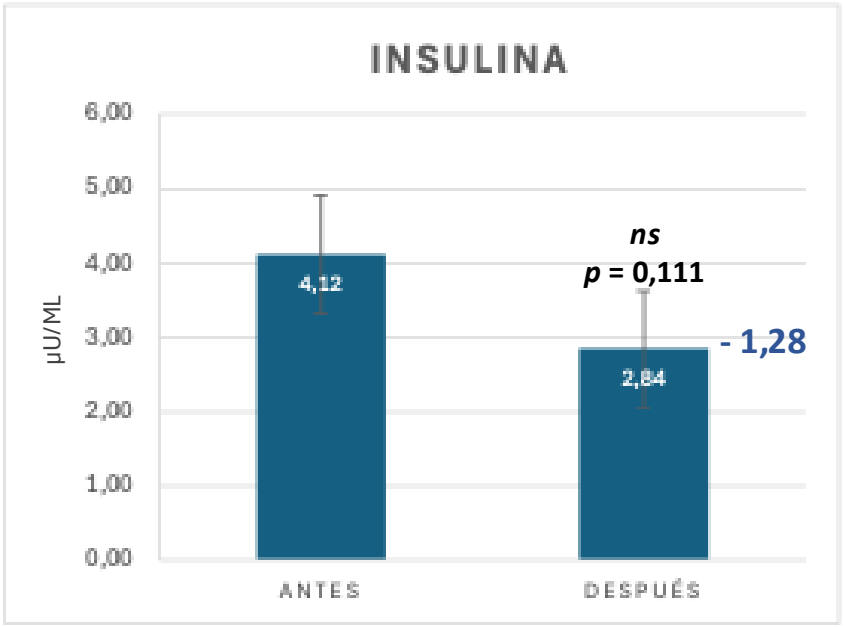
ENERGY METABOLISM
-SUGARS -



45-75 mg/dL

Significant energy demand - Hypoglycaemia



0,5-1,5 ng/mL

Slightly low, hormonal adaptation to metabolic stress

Rangos fisiológicos de referencia: Kaneko et al. (2008).

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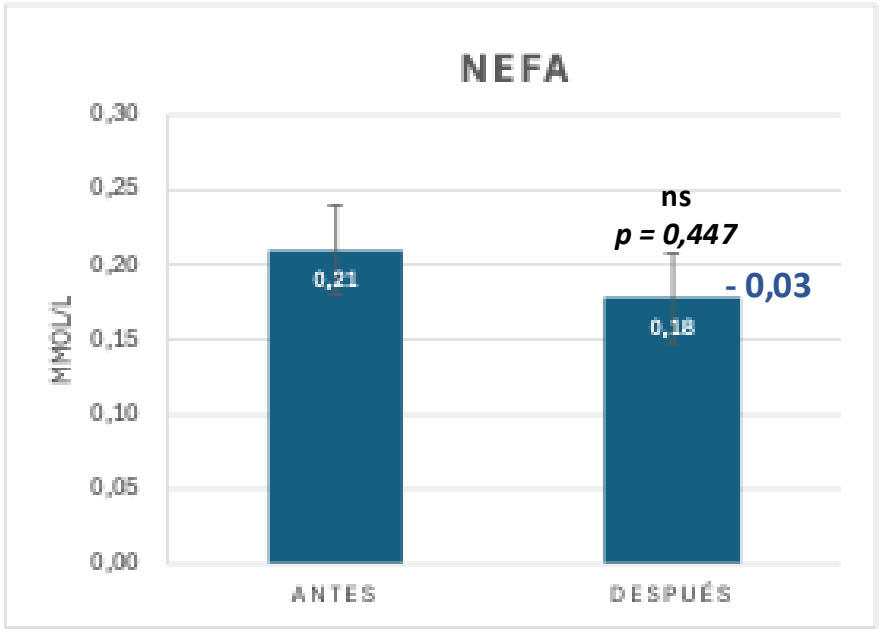
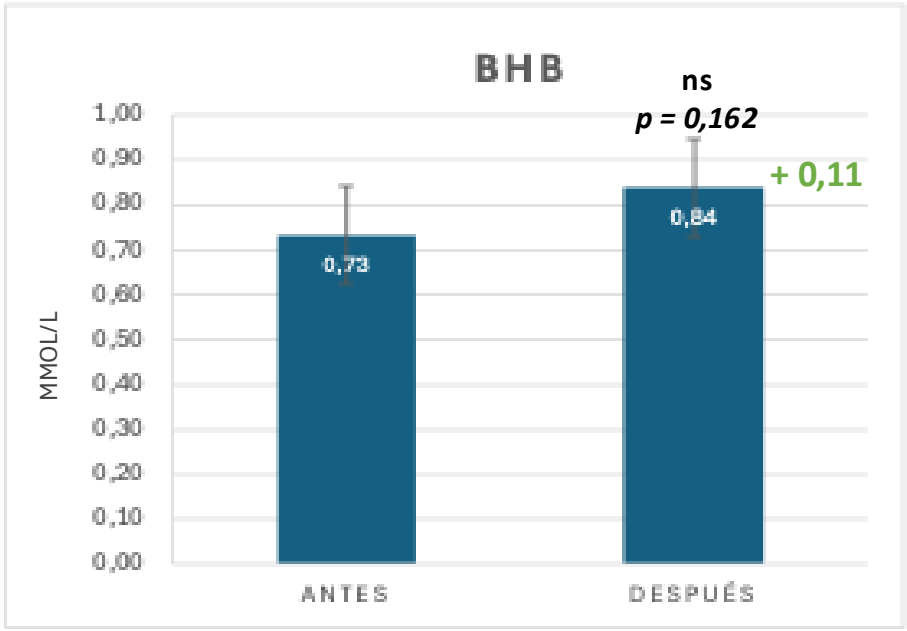
ENERGY METABOLISM
-ENERGY RESERVES -



< 40 mmol/L



0,41-0,68 mmol/L

No mobilisation of fat reserves, controlled metabolic compensation

Rangos fisiológicos de referencia: Kaneko et al. (2008).

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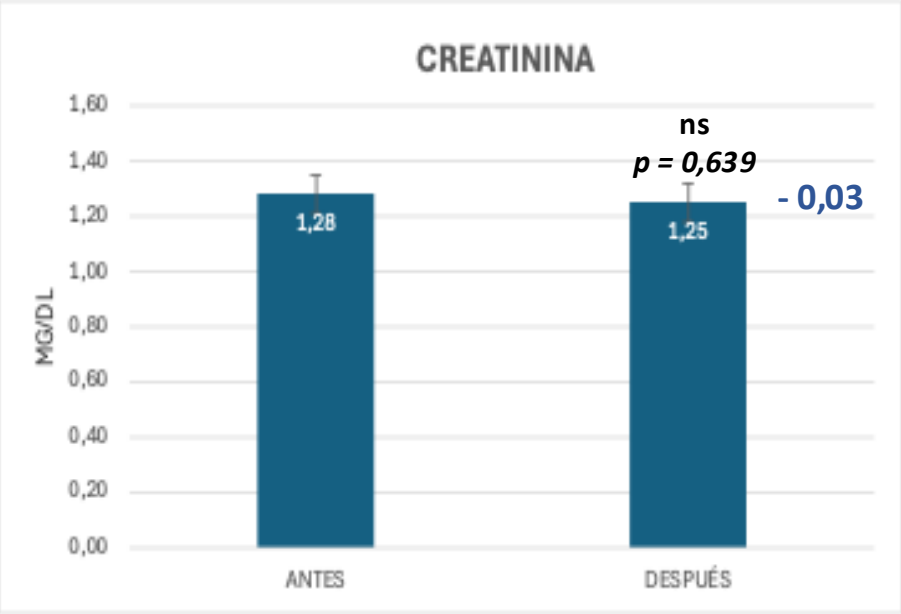
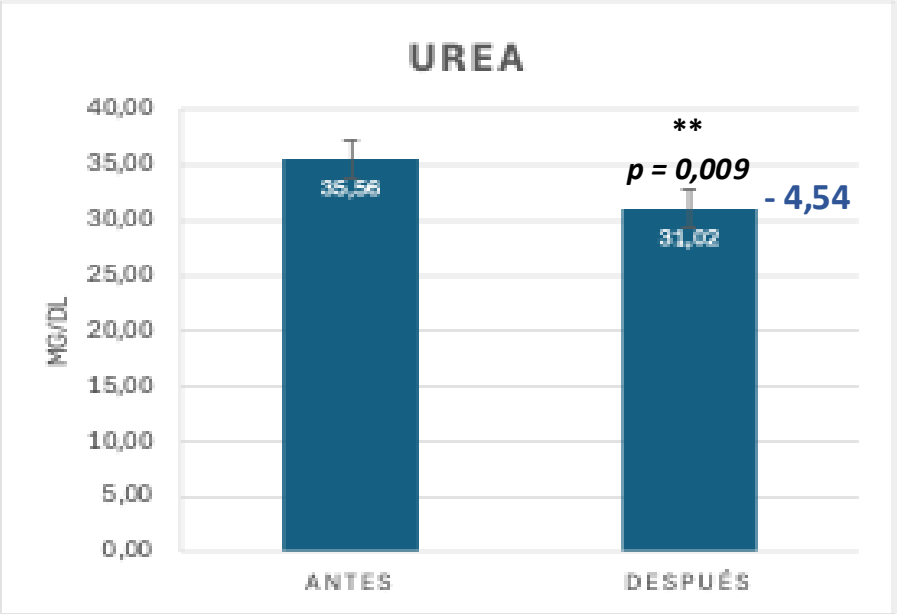
RENAL FUNCTION



1-2 mg/dL

Normal and stable kidney function



20-30 mg/dL

Slightly elevated, tendency to normalise

Rangos fisiológicos de referencia: Kaneko et al. (2008).

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CONCLUSIONS

The observed changes in blood parameters remained within physiological ranges, demonstrating an efficient adaptive response to transport stress.

Hypoglycaemia was compensated for by adaptive mechanisms, without leading to reserve mobilisation.

It is important to monitor blood glucose levels in transported calves, ensuring good hydration and nutrition before and during transport, as well as in the recovery period.

The results suggest that the transport protocol allowed for adequate physiological adaptation.

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HoloRuminant PARTNERS

Thank you for your attention

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