

BLOOD CRITICAL VALUES' PROFILE OF AMERICAN BARROWS VS. BOARS ARRIVING TO MÉXICO AFTER 27 HOURS OF TRANSPORTATION

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ABSTRACT

Introduction

Transport, fasting, slaughter and thirst are stress factors contributing to live weight loss and poor carcass performance in pigs. Physiological responses of pigs as a consequence of transportation result in physiological stress and/or physical fatigue, and can even lead to death.

Keywords: pigs, transportation, haematocrit, carcass pH, boars, barrows, blood gases

OBJECTIVE

The aim of the study was to characterize and compare the blood critical values of barrows and pig boars transported from USA to Mexico in 27 hours period.

METHODS

A total of 90 Duroc x Pietrain pigs (40 barrows and 50 boars) coming from USA to Mexico with a transportation time of 27 hours were monitored from arrival to the slaughterhouse to sale as cold carcass. All pigs were blood sampled from the jugular vein within 15 sec of restraining on arrival. Blood was mixed with lithium heparin in order to impede alterations on blood gases. Acid-base imbalance, metabolic profile, and dehydration measurements were measured monitoring the following indicators: pH, bicarbonate, glucose, lactate, minerals, blood gases (pO₂ and pCO₂) and haematocrit, carried out with a critical blood value measuring device of third generation (GEM Premier 3000 from IL Diagnostics, USA-Italy). Results were analyzed through a Kruskal-Wallis test.

RESULTS

There were significant differences between male class ($P<0.05$) for: ear temperature (°C), pH, pCO₂, Ca⁺⁺, glucose and haematocrit. On arrival at the abattoir, castrated male pigs had greater

($P < 0.01$) plasmatic Ca^{++} (mmol/L), glucose (mg/dL), pCO_2 (mm/Hg), and a higher temperature ($^{\circ}\text{C}$) compared with the boars (Ca. barrows 1.29 ± 0.01 , boars 11.22 ± 0.008 ; glucose: barrows 121.60 ± 5.10 , boars 66.12 ± 2.76 ; pCO_2 barrows 41.50 ± 1.25 , boars 34.56 ± 0.75 , temperature: barrows 38.42 ± 0.16 , boars 37.67 ± 0.19). There was a significant drop on pH values ($P < 0.0001$) for the barrows.

CONCLUSIONS

Results indicate that boars are more tolerant to transport stress than barrows. With regard to the haematocrit, boars showed higher values than barrows ($46.28 \pm 0.83\%$ vs. 39.95 ± 1.06 , respectively). It is worth mentioning that lactate levels (mg/dL) were within the normal range for barrows and boars (27.58 ± 3.42 and 30.20 ± 2.77 , respectively). These findings may be due to the long transportation time where animals passed from the alarm phase with lacto-acidaemia to the adaptation phase where the balance for the respiratory chain for the ATP production by anaerobic route is restored.