

# IMPACT OF EXPERIMENTAL HYPERGLYCEMIA ON BLOOD LACTATE CHANGES IN HEALTHY ANESTHETIZED SWINE

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## INTRODUCTION

Blood lactate and glucose values help as monitoring and prognostic tools during surgery, strongly correlate with morbidity and mortality. [2;3;4] There are two main types of hyperlactatemia, A and B. Type B can be caused by hyperglycemia. [5;6] Hyperglycemia alters hepatic finely regulated glucose balance, [3] affecting lactate production, breakdown, and clearance. Imbalances reflect in circulating lactate concentration. [5;7]

## METHODS

The approval (No. G2-171) for the research was permitted by Lithuania's State Food and Veterinary Service. The experiment contained ten clinically healthy females pigs with an average age of 45 days and a weight of 35 kg. Each underwent general anesthesia with adequate mechanical ventilation. To induce hyperglycemia ( $>126$  mg/dL-1), [8] animals received a continuous intravenous 20 % glucose solution administered at 50 ml h. The blood lactate concentration range was set from 0.5 to 5.5 mmol L. [9] Venous blood samples were taken every hour throughout the four-hour experiment to analyze changes. First blood samples were taken before glucose infusion and defined the control, while the remaining three samples assess as experimental. Data were presented for statistical analysis by Pearson's r correlation test and a t-test to compare two different groups. The significant level was set at ( $p<0.05$ ).

## CONCLUSIONS

This study demonstrates a strong direct relationship between experimental hyperglycemia and blood lactate changes. However, induced hyperglycemia increased blood lactate concentrations in pigs within clinical limits.

## AIM

This study aimed to describe the relationship between experimental hyperglycemia and blood lactate changes in healthy pigs undergoing general anesthesia.

## RESULTS

Hyperglycemia occurred in 10 out of 10 pigs. A significant increase in glucose levels shows in 90% of the blood samples from the experimental group ( $p=0.00017$ ). After induced hyperglycemia, the blood lactate concentration increased in 86.67 % of samples. In experimental samples serum lactate levels increased by 0,37 - 1,75 mmol L compared to pre-experimental samples values of 0,44 - 0,86 mmol L ( $p=0.0064$ ). The study showed a strong correlation between glucose and lactate values ( $0,78 \pm 0,1$ ) ( $p=0.0000001$ ).

