

# Serum Electrolyte Concentrations Following Intravenous Administration of a 50% Dextrose Solution Bolus to Fresh Dairy Cows

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## Introduction

Ketosis in postpartum dairy cows is often treated by intravenous administration of 50% dextrose solution. Intravenous administration of dextrose to humans increases urinary excretion of calcium, potassium, magnesium, and phosphorus. Low blood levels of these electrolytes have been associated with recumbency in dairy cows. The objective of this study was to determine whether intravenous bolus treatment with 50% dextrose solution would decrease serum electrolyte levels in postpartum Holstein cows.

## Materials and Methods

Twenty four Holstein cows between 5 and 10 days postpartum were randomly assigned to intravenous bolus treatment with 500 ml or 1 L 50% dextrose solution, or a control treatment of 1L 0.9% saline solution. Urine production was measured for 8 hours before and 8 hours after treatment. Serum calcium, phosphorus, magnesium, potassium, sodium, and chloride were

measured before treatment and at 0.25, 0.5, 1, 2, 4, 8, 12, and 24 hours after treatment.

## Results

Mean urine production was increased following treatment for all groups, but differences among treatment groups were not significant. Dextrose-treated cows had significantly decreased post-treatment serum phosphorus levels when compared with cows treated with saline solution, but the magnitude of decrease was not different between the two dextrose-treated groups. No adverse effects of saline or dextrose treatment were observed in the clinically normal cows in the study.

## Significance

The results of this study demonstrate that treatment of postpartum Holstein cows with an intravenous bolus of 500 ml or 1 L of 50% dextrose solution causes a transient decrease in serum phosphorus levels.