

# Pharmacokinetics and pharmacodynamics of pantoprazole in calves

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## Introduction

Abomasal ulcers occur commonly in veal calves as well as and hospitalized beef calves. One of the recognized therapeutic interventions for abomasal and gastric ulceration is the increase of the gastric pH. The lack of efficacy data for gastroprotectants, such as pantoprazole, for ulcer prevention and treatment in cattle is a health and welfare issue. The goal of this study was to investigate the pharmacokinetics and pharmacodynamics of pantoprazole administered to healthy calves.

## Materials and methods

Six approximately one-month-old beef calves were cannulated with human gastrostomy tubes and randomly assigned to intravenous (1 mg/kg) and or subcutaneous (2 mg/kg) administration. Pantoprazole was administered on 3 consecutive days. Blood was sampled on days 1 and 3, abomasal fluid was sampled on all days. After a 10-day washout period, treatments were crossed-over. High-pressure liquid chromatography was used to determine pantoprazole concentration in plasma. A pH meter was used to determine abomasal pH.

## Results

Results showed a significantly higher pH for all calves at 4, 6 and 8 hours post-administration of pantoprazole as well as rapid elimination (t<sub>1/2</sub> half life of of 1.19 and 1.73 hrs for intravenous and subcutaneous administration respectively).

## Significance

Increased abomasal pH by pantoprazole could allow for improved abomasal ulcer treatment in calves.

