

# Pharmacokinetics of multiple-dose subcutaneous flunixin meglumine in lactating dairy goats

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## Introduction

Flunixin meglumine (FM) is a non-steroidal anti-inflammatory drug that is approved by the US Food and Drug Administration (FDA) for intravenous (IV) administration in cattle and intramuscular (IM) administration in swine for the control of pyrexia associated with respiratory disease. FM is commonly administered by the SC route in lactating goats; however, pharmacokinetic data is lacking for this administration route.

## Materials and Methods

This study evaluated the multiple-dose pharmacokinetics of FM in lactating goats (n=8) dosed at 0.5 mg/lb (1.1 mg/kg) body weight. Goats were administered FM by either IV or SC routes, using a 2-way crossover study design with a 2 week washout period. Plasma concentrations the primary metabolite, flunixin 5-OH (5-OH), were measured using ultra performance liquid chromatography with mass spectrometric detection in samples collected at 0, 5, 10, 15, 30, and 45 minutes

post-treatment as well as 1, 2, 4, 6, 8, 12, 18, 24, 30, 36, 48, 60, 72, 84, 96, 108, and 120 hours after single dose administration. Milk samples for 5-OH were measured in samples collected at 0, 1, 2, 4, 6, 8, 12, 18, 24, 36, 48, 60, 72, 84, 96, 108, and 120 hours after administration. Preliminary non-compartmental pharmacokinetic parameters were then derived from the time versus 5-OH milk concentration data. Injection sites were also evaluated for reactions.

## Results

Subcutaneously administered FM in goats has similar milk pharmacokinetic parameters to FM administered by the IV route following multiple dosing.

## Significance

Subcutaneous dosing of FM in goats may provide a useful alternative to IV dosing when venous access is limited.

# Penetrating captive-bolt euthanasia of goats: optimal shot placement and evaluation of polled and horned goats

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## Introduction

Anatomical placement of a penetrating captive bolt device (PCB) when euthanizing animals is critical to ensure vital structures are damaged, thereby rendering animals immediately unconscious and death occurring without a return to sensibility. Although PCB are an approved method for euthanizing small rumi-

nants, the current peer-reviewed literature contains discrepancies regarding the appropriate anatomic site to be used for euthanasia procedures. Currently, 2 important documents, American Veterinary Medical Association's 2013 Euthanasia Guidelines (AVMA) and World Organization for Animal Health's Terrestrial Code (OIE), are in disagreement over the recommended site for captive bolt placement in small ruminants. The