

# Research Summaries 4

---

## Clinical study to assess the level of unconsciousness in cattle following the administration of high doses of xylazine hydrochloride

**R. D. Dewell, DVM, MS<sup>1</sup>; L.L. Bergamasco, DVM, PhD<sup>2</sup>; C. K. Kelly, DVM<sup>3</sup>;**

**J. K. Shearer, DVM, MS, Diplomate ACAW<sup>1</sup>; G. A. Dewell, DVM, PhD<sup>1</sup>**

<sup>1</sup>*Veterinary Diagnostic and Production Animal Medicine, College of Veterinary Medicine, Iowa State University, Ames, IA 50011*

<sup>2</sup>*Department of Animal and Poultry Sciences, College of Agriculture and Life Science, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061*

<sup>3</sup>*Veterinary Clinical Sciences, College of Veterinary Medicine, Iowa State University, Ames, IA 50011*

### Introduction

Achieving anesthesia without DEA controlled drugs prior to administration of IV potassium chloride (KCl) is a limiting factor for humane euthanasia. The use of an overdose of xylazine hydrochloride (XH) is thought by some practitioners to induce unconsciousness and is commonly administered prior to IV KCl injection. The purpose of this study was to determine the level of unconsciousness achieved from an overdose of XH in cattle.

### Materials and Methods

Six yearling crossbred beef calves that weighed 500 to 800 lb (227 to 364 kg) were enrolled. Five hundred mg of XH were administered initially (time [T] = 0) with an additional 500 mg and 1,000 mg administered at 5 (T = 5) and 10 (T = 10) minutes after the initial dose, respectively. Each calf's brain activity was monitored with a 12-channel electroencephalogram (EEG). Two channels of electrocardiographic (ECG) monitoring were

applied. Both EEG and ECG monitoring was continuous throughout the process. Other variables measured at each time point included respiratory rate, character eye reflexes, jaw tone, temperature, presence of a gag reflex, seizure activity, vocalization, recumbency, and eye globe position. Descriptive statistics and ANOVA were used to measure differences in recorded variables among T = 0, T = 5, and T = 10.

### Results

The use of an overdose of XH did not induce a surgical plane of anesthesia in any of the study cattle.

### Significance

On the basis of the results of this study, we concluded that it is unlikely a state of unconsciousness can be achieved with the use of very high doses of XH. Therefore, the use of a XH-KCl combination for euthanasia of cattle cannot be recommended.