

# Compounding Iron Dextran with NSAIDs at processing



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The objective of this project was to evaluate whether the mixing (compounding) of NSAIDs (anti-inflammatory/analgesic agents), such as meloxicam or flunixin meglumine, with iron dextran for administration to piglets at the time of processing has any effects on the availability of the NSAID. In a series of experiments, we evaluated the stability and systemic availability of both NSAIDs when mixed with iron dextran in the same bottle for administration to piglets at the time of processing. We also evaluated the effects of this practice on iron dextran's ability to increase piglet hemoglobin concentrations. We found that the amount of NSAID recovered from the bottle was reduced beginning shortly after mixing. We also found that blood drug levels measured in piglets for each NSAID when compounded with iron dextran was significantly lower than when each NSAID was administered alone to piglets. We did not find any significant effects of mixing NSAIDs with iron dextran on iron dextran's ability to increase hemoglobin following administration to piglets. The overall conclusion from these experiments is that the mixing of NSAIDs with iron dextran in the same bottle for administration to piglets at the time of processing results in a suspected drug interaction that reduces the shelf-life of the formulation and the amount of NSAID available for therapeutic effects.



## Introduction

When NSAIDs (anti-inflammatory/analgesic agents) such as meloxicam or flunixin meglumine are administered to piglets at the time of processing, it is tempting to mix or compound the NSAID with iron dextran to be delivered in a single injection, thereby reducing the number of injections to the piglet. Technically the practice of mixing two different products in the same syringe/bottle is not allowed under the Canadian Quality Assurance program, nor is the compounding of drugs for food animal use acceptable to the Canadian Global Food Animal Residue Avoidance Databank, but we are aware that this practice does occur and therefore it seems prudent to evaluate possible drug interactions that could affect the absorption and availability of either the NSAID or iron. The study was carried out using three separate experiments and performed at the University of Guelph, with the following

objectives i) to evaluate the bioavailability of meloxicam (Metacam® 20 mg/mL Solution for Injection, Boehringer Ingelheim Canada LTD) and flunixin meglumine (Banamine®, Merck Animal Health) when compounded with iron dextran (Dexafer-200®, Vetoquinol) and administered to newborn piglets of approximately 5 days of age, ii) to evaluate the effect of compounding these agents on iron dextran's ability to increase piglet hemoglobin concentrations, and iii) to evaluate the storage life by measuring concentrations of the NSAIDs at various times after mixing with iron dextran.

## Results and Discussion

Measurement of recoverable flunixin meglumine and meloxicam when compounded in iron dextran was accomplished using high performance liquid chromatography. Our results showed that recoverable levels of either NSAID were reduced,