

REPORTED USE AND PERCEPTIONS OF NON-STEROIDAL  
ANTI-INFLAMMATORY DRUGS IN FOOD ANIMAL PRACTICE

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Experimental evidence indicates that the use of non-steroidal anti-inflammatory drugs (NSAIDs) can favorably influence the course and outcome of certain economically important diseases of livestock, such as acute coliform mastitis, bovine respiratory disease, and agalactia/hypagalactia syndrome in sows (Anderson et al., 1986; Gibbs, 1984; Young, 1986). Although several NSAIDs, including flunixin meglumine, phenylbutazone, naproxen, meclufenamic acid and dipyron, are available for veterinary use, none are specifically marketed in the United States for treatment of food producing animals. Therefore, accurate information is not readily available concerning appropriate dosages, dosage intervals, and withholding guidelines for food products. Because of the reported efficacy of NSAIDs as therapeutic agents and their availability to veterinarians and producers, it may be assumed that NSAIDs are being used to treat food producing animals despite the lack of information concerning their use. The major objectives of this study were to determine: 1) the extent to which NSAIDs are used by veterinarians in the treatment of livestock; 2) what factors might influence whether or not NSAIDs are used, 3) if withdrawal times for food products are recommended when NSAIDs are used, and 4) to determine the perceptions of food animal practitioners concerning the clinical efficacy of NSAIDs, side effects and potential implications of human health hazards if NSAIDs residues occurred in food products.

**MATERIALS AND METHODS**

A cross-sectional study was designed, and a survey questionnaire was used for data collection. The survey was mailed to a stratified random sample of 2000 veterinarians located in the continental United States, whose practices were at least 50% food animals. Stratification was based on state of practice. The data was grouped by decade of graduation into the categories of 1, 2, 3, and 4, representing graduates from the 1980's, 1970's, 1960's and 1950's through the 1930's. Data was also grouped by region of the country, and percentage of practice devoted to dairy and beef.

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Frequency distribution, chi square analysis, correlation, and stepwise regression were performed to analyze the data using a statistical package.<sup>a</sup> A minimum significance level of  $P < 0.05$  was used for all tests.

## RESULTS AND DISCUSSION

Of 2000 practitioners surveyed, 1424 (70%) responded to the questionnaire. Of those respondents, 1325 (95%) reported using NSAIDs in treating food producing animals.

The national average for reported frequency of NSAIDs use was 18.5% for 1 to 2 times per month, 24.7% for once a week, and 56.8% for more than once a week. Flunixin meglumine was reported to be used by 95% of respondents whereas, 69%, 66%, and 69% of respondents reported use of dipyron, aspirin, and phenylbutazone, respectively. Significant differences ( $P < 0.0001$ ) for frequency of use and type of drug used were observed based on region of the country, decade of graduation, and practice type.

Based on the stepwise regression model, the greater the percentage of dairy in a respondent's practice, the more frequent is NSAIDs use and reported use of aspirin. Increasing number of years since graduation from veterinary college and increasing percentage of beef practice were factors associated with less frequent use of NSAIDs. Also, increasing years since graduation was negatively correlated to aspirin use.

Approximately 88% of respondents indicated that when NSAIDs were used in conjunction with antibiotic therapy, recommendations to their clients concerning withdrawal times for milk and/or meat were based on the withdrawal times for the antibiotic. More than 50% of respondents did not make a milk or slaughter withdrawal recommendation when using aspirin or dipyron as a sole therapy. However, at least 45% of respondents did recommend withdrawal times when flunixin or phenylbutazone were used alone. Withdrawal recommendations made by veterinarians for milk and meat products when NSAIDs were used alone were wide-ranging.

Greater than 95% of respondents perceived a clinical benefit from the use of NSAIDs, and reported that adverse side-effects were of no concern or of minor concern only. Non-steroidal anti-inflammatory drug residues in food products were not perceived as a major concern, and were not believed to have the same human health implications as antibiotic residues in food.

The information obtained from this survey does indicate a pattern for NSAID use which may apply to veterinary use of therapeutic agents in general. It appears that the length of time

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a. SAS statistical software. SAS Institute Inc. Cary, NC

since graduation from veterinary college, location of one's practice, and type of practice may influence how NSAIDs are used. Understanding how therapeutic decisions are made by veterinarians is critical. Such knowledge may help determine how pharmacology is taught in a veterinary curriculum. Also, it may be useful in targeting certain veterinary populations for continuing education programs addressing appropriate use of drugs and avoidance of drug residues.

#### REFERENCES

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