

# Short Topics

Dr. J. Harry James, *presiding*

## Productivity Studies with Ivermectin in Beef Cattle

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The broad spectrum antiparasitic agent, ivermectin, has been shown to be safe and effective in cattle, sheep, horses, and swine. Ivermectin has been used successfully in many millions of cattle around the world. To assist bovine practitioners and livestock producers in determining the most cost effective usage of this product and to enable them to fully utilize its broad-spectrum activity, productivity trials under many different conditions have been and currently are being conducted.

Summaries of productivity studies done in cattle of several ages under different management conditions and in separate geographic areas will be presented.

**ASR 8621** was conducted in Brazil by Merck research workers to compare the productivity response of ivermectin treatment to levamisole treatment in grazing cattle. One hundred and sixty-eight cattle were placed in 12 native grass pastures. Four replicates of 3 pastures per replicate were formed. Cattle were pastured for 364 days.

Results of ASR 8621 are as follows:

Body Weight Gains (1)

| Group and Treatment                                   | Initial weight (kg) | Weight gain to Day 364 (kg) |
|---|---------------------|-----------------------------|
| Ivermectin 200 mcg/kg S.C. every 4 weeks              | 153.9               | 150.0 <sup>a</sup>          |
| Ivermectin 200 mcg/kg S.C. 3 times per year           | 154.5               | 112.4 <sup>b</sup>          |
| Levamisole 3.75 mg/kg <sup>(2)</sup> 3 times per year | 153.7               | 84.1 <sup>c</sup>           |

(1) = Least square means; adjusted for exclusion of one experimental unit receiving MK-933 every 4 weeks.

(2) = 3.75 mg/kg is the approved dosage of levamisole in Brazil. The U.S. approved dosage is 6 mg/kg.

a, b, c = Means with no superscript in common are significantly different. ( $P < 0.05$ )

**ASR 10723** was conducted on an Oklahoma ranch to evaluate the effect of IVOMEK injected subcutaneously at 200 mcg per kilogram on the liveweight gain of crossbred

stocker-feeder cattle. Two hundred and sixteen steers weighing from 148 to 234 kg were allocated by restricted randomization to four pens. Two pens were assigned to each treatment. The cattle were limit fed a mixture of corn and alfalfa hay for 110 days. Cattle treated with IVOMEK gained a mean of 66.1 kg as compared to the 59.4 kg liveweight gain of the control animals.

**ASR 8751** was conducted on the Garst Farm at Coon Rapids, Iowa, to study the effect of IVOMEK injected once subcutaneously at 200 mcg/kg, one to six weeks prior to calving, on the reproductive efficiency and calf weaning weight of first calf heifers.

The 299 cows in this trial were randomly assigned within breed and calf sire groupings to receive either IVOMEK Injection or its vehicle. All animals were then housed together until weaning. Cows initially were held in dry lot for calving and later moved to summer pasture. Calves were creep fed a grain ration during the grazing period.

Calves from IVOMEK treated cows weighed an average of 173.2 kg at weaning and calves from control cows weighed 166.4 kg. This weight advantage was statistically significant ( $P < 0.05$ ) for heifer calves but not for bulls or steers.

Pregnancy examination following a 45 day A.I. breeding period showed that 88 of 113 or 78% IVOMEK treated cows which nursed a calf were pregnant while 69 of 97 or 71% of control cows were pregnant.

**ASR 8108 and ASR 9723** were conducted at the University of Georgia to determine the effects of IVOMEK on weight gain in beef cows and calves. A total of 470 cows and calves from two herds was used in 1980 and 465 cows and calves were used in 1981. The cattle were assigned to 12 pastures. Cattle in six pastures were untreated controls and the cattle in the other six pastures were given ivermectin subcutaneously at 200 mcg/kg.

In 1980, cows and calves in one herd were given IVOMEK in May and the other herd was treated in June. IVOMEK Injection calves in both herds were treated again in August. In 1981, the IVOMEK treated cows in both herds were injected in July; treatment calves were injected once with IVOMEK in late July in one herd and in early August in the

# usable milk 24 hrs. sooner!\*

## when you treat Udder Edema with

# Lasix® (furosemide)

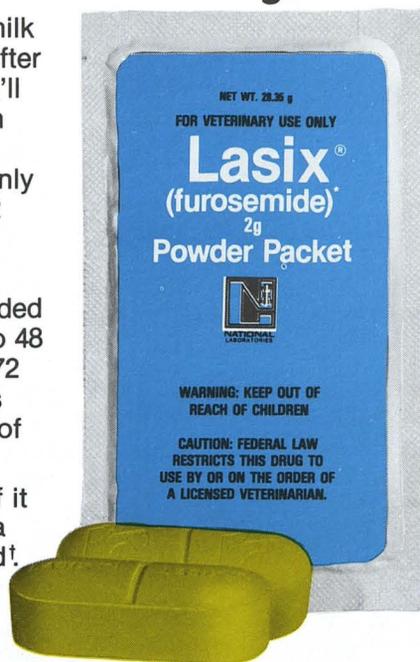
### Powder Packet or Bol-O-Tabs® (2 g)

\* It's the Lasix® advantage. Since milk must be withheld only 48 hours after the last treatment with Lasix, you'll have 2 extra usable milkings from each cow treated. Compare this with Naquasone, another commonly used remedy for udder edema: 72 hours (6 milkings) is the required withdrawal period.

And consider this: the recommended treatment period for Lasix is 24 to 48 hours. For Naquasone, it's 48 to 72 hours. In many edema cases, this could mean an additional saving of **2 TO 4 MORE MILKINGS!**

**ANOTHER IMPORTANT POINT:** if it is necessary to treat udder edema before calving, Lasix may be used. *Naquasone may not be used during pregnancy because it contains the corticosteroid Dexamethasone.*

†Lasix is contraindicated only during the second trimester of pregnancy.



**Safe** - No risk of abortion.

**Effective** - Two-day therapy rapidly relieves edema, thereby lessening the risk of permanent udder damage.

**Convenient** - Empty contents of one packet per cow daily for two days as a top dressing on grain mixture.

**Palatable** - Readily accepted by cows.

**Economical** - No stress and associated milk loss with a feed top dressing. Milk production maintained following "milk-out" period.

**AVAILABLE ONLY FROM LICENSED VETERINARIANS**

#### BRIEF SUMMARY

(For full prescribing information, see package insert.)

#### Lasix® Powder Packet (2gm) Bol-O-Tabs®

**CAUTION:** Federal law restricts this drug to use by or on the order of a licensed veterinarian.

#### INDICATIONS

##### Cattle:

Lasix® (furosemide) is indicated for the treatment of physiologic parturient edema of the mammary gland and associated structures.

#### CONTRAINDICATIONS - PRECAUTIONS

Lasix® (furosemide) is a highly effective diuretic which if given in excessive amounts, may result in dehydration and electrolyte imbalance. Therefore, the dosage and schedule may have to be adjusted to the patient's needs. The animal should be observed for early signs of electrolyte imbalance, and corrective measures administered. Early signs of electrolyte imbalance are: increased thirst, lethargy, drowsiness or restlessness, fatigue, oliguria, gastrointestinal disturbances and tachycardia. Special attention should be given to potassium levels. Lasix® (furosemide) may lower serum calcium levels and cause tetany in rare cases of animals having an existing hypocalcemic tendency.

Although diabetes mellitus is a rarely reported disease in animals, active or latent diabetes mellitus may on rare occasions be exacerbated by Lasix® (furosemide).

Electrolyte balance should be monitored prior to surgery in patients receiving Lasix® (furosemide). Imbalances must be corrected by administration of suitable fluid therapy.

Lasix® (furosemide) is contraindicated in anuria. Therapy should be discontinued in cases of progressive renal disease if increasing azotemia and oliguria occur during the treatment. Sudden alterations of fluid and electrolyte imbalance in an animal with cirrhosis may precipitate hepatic coma; therefore, observation during period of therapy is necessary. In hepatic coma and in states of electrolyte depletion, therapy should not be instituted until the basic condition is improved or corrected. Potassium supplementation may be necessary in cases routinely treated with potassium-depleting steroids.

#### WARNINGS

Lasix® (furosemide) is a highly effective diuretic and, as with any diuretic, if given in excessive amounts may lead to excessive diuresis that could result in electrolyte imbalance, dehydration and reduction of plasma volume, enhancing the risk of circulatory collapse, thrombosis and embolism. Therefore, the animal should be observed for early signs of fluid depletion with electrolyte imbalance, and corrective measures administered. Excessive loss of potassium in patients receiving digitalis or its glycosides may precipitate digitalis toxicity. Caution should be exercised in animals administered potassium-depleting steroids.

Sulfonamide diuretics have been reported to decrease arterial responsiveness to pressor amines and to enhance the effect of tubocurarine. Caution should be exercised in administering curare or its derivatives to patients undergoing therapy with Lasix® (furosemide) and it is advisable to discontinue Lasix® (furosemide) for one day prior to any elective surgery.

**CATTLE: Milk taken from animals during treatment and for 48 hours (four milkings) after the last treatment must not be used for food. Cattle must not be slaughtered for food within 48 hours following last treatment.**

Lasix® (furosemide) is not indicated during the second trimester of pregnancy.

#### DOSAGE AND ADMINISTRATION

The usual dose of Lasix® (furosemide) is 1 to 2 mg/lb body weight (approximately 2.5 to 5 mg/kg). A prompt diuresis usually ensues from the initial treatment. Diuresis may be initiated with Lasix® (furosemide) Injection 5% and maintained by oral treatment following a 12-hour interval.

#### DOSAGE:

##### Oral: CATTLE

The contents of 1 packet (2g) per cow daily to be administered with the animal's individual concentrate ration. **Treatment not to exceed 48 hours postparturition.**

##### Parenteral: CATTLE

The individual dose administered intramuscularly or intravenously is 500 mg (10 ml) once daily or 250 mg (5 ml) twice daily at 12-hour intervals. **Treatment not to exceed 48 hours postparturition.**

#### HOW SUPPLIED

##### Parenteral:

Lasix® (furosemide) Injection 5% (50 mg/ml)  
Each ml contains: 50 mg furosemide as a diethanol-amine salt preserved and stabilized with myristyl-gamma-picolinium chloride 0.02%, EDTA sodium 0.1%, sodium sulfite 0.1% with sodium chloride 0.2% in distilled water, pH adjusted with sodium hydroxide.  
Available in 50 ml multidose vials.

##### Oral:

Lasix® (furosemide) 2g Powder Packet  
Each packet contains 2g of furosemide: 4-chloro-N-furfuryl-5-sulfamoylanthranilic acid plus inert ingredients.  
Available in boxes of 12 packets each.  
Lasix® (furosemide) 2 g Bol-O-Tabs®  
Each bolus contains 2g of furosemide: 4-chloro-N-furfuryl-5-sulfamoylanthranilic acid.

Available in boxes with 12 Bol-O-Tabs® each.  
Store at controlled room temperature (59°-86°F).  
Avoid exposure to light.

Tablets with 50 mg or 12.5 mg each are available for use in small animals.

##### Lasix® (furosemide) 2g Powder Packet

Manufactured By:  
Hoechst-Roussel  
Pharmaceuticals Inc.  
Somerville, New Jersey  
08876

##### Lasix® (furosemide) Bol-O-Tabs®

Manufactured By:  
Hoechst-Roussel  
Pharmaceuticals Inc.  
Somerville, New Jersey  
08876

##### Lasix® (furosemide) Injection 5%

Manufactured By:  
Taylor Pharmaceutical Co.  
Decatur, Illinois 62525

Distributed by:



**AMERICAN HOECHST CORPORATION**  
ANIMAL HEALTH DIVISION  
Somerville, New Jersey 08876

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other herd. The cattle were weighed and fecal examinations for nematode eggs were conducted at about monthly intervals for 105 days in one herd and 113 days in the other herd in 1980 and for 87 days in 1981. In both trials, cows in both groups had <2 EPG, and IVOMEC treated cows had <1 EPG a month later. In 1980 both calf groups had 36 EPG at the first sampling and a month later treated calves had <1 EPG. In 1981 both calf groups had about 100 EPG at time of treatment and a month later treated calves had <3 EPG. Treated calves had mean weight-gain advantages ( $P < 0.05$ )

of 13.9 kg over 105 or 113 days in the two herds in 1980 and 14.7 kg over 59 days in 1981. Treated cows had a 14.4 kg and 5.5 kg weight advantage in 1980 and 1981.

### Conclusion

As demonstrated by the above trials, ivermectin is an effective tool for increasing liveweight gains for cattle under a wide variety of usage conditions.

## Scenes from Yesteryear



*J. J. herd on the high plains.*



*"Cowboys Eating" CC Cowboys seated around the chuck wagon and the cook. Note also the small sibley tents.*

Photos courtesy of Western History Collection, University of Oklahoma.