

Probantheline Bromide and Cimetidine in the Control of Abomasal Acid Secretion

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Each of three cows fitted with a rumen cannula were maintained on a constant diet for two weeks prior to the experiment. Each cow was given 4, 8 and 16 mg/kg cimetidine and probantheline bromide to determine the effects of these drugs on acid secretion. Samples were aspirated every 30 minutes from the abomasum and rumen for one hour prior to receiving the drug and for 5½ hours after the treatment. The pH measurements were completed in duplicate on a Model 5 Corning pH Meter. The samples were also analyzed for chloride concentration.

Neither probantheline nor cimetidine had any significant effect on abomasal pH, suggesting neither drug would be of value in treating abomasal ulcers.

Question: Do histamines cause ulcers?

Dr. Whitlock: I do not have any experimental data to support that but my impression is that histamines by themselves are of minimal importance in the pathogenesis of ulcers. Likewise, antihistamines would probably be of little value in therapy.

Dietary Effects on Abomasal Motility in Cattle

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This experiment was an attempt to provide additional information on the nutritional etiopathogenesis of abomasal displacement in cattle and stimulate more attention to the prepartum and early postpartum feeding of cattle to prevent abomasal displacement. The objectives of this study were: (1) to determine the effect of various rations on abomasal electromyographic activity, contractile strength and intraluminal pressure changes and (2) to determine the relationship of rumen volatile fatty acid (VFA) concentration and abomasal VFA concentration to abomasal motility. Three adult nonlactating Jersey cows were fitted with a ruminal cannula, abomasal cannula and three silver/silver chloride bipolar electrodes were implanted into the abomasal wall to measure electromyographic activity. The electrodes were alternated with two extraluminal strain gauges to record abomasal wall mechanical activity. Intraluminal pressures were measured in the rumen and abomasum with pressure manometers. Abomasal motility was measured in three cows fed three different rations. The rations evaluated were: Ration A: corn silage (75% of net energy requirements [NER]) and concentrate (25% NER); Ration B: grass hay (75% NER) and concentrate (25% NER); and Ration C: alfalfa hay (45% NER), corn silage (30% NER) and concentrate (5% NER).

Recordings were made with a Model R-711 Beckman 12 channel physiograph by connecting to a 9-pin plug implanted in the right paralumbar fossa, which contained wires from the

electrodes and strain gauges. Recording began 1 hour prior to morning feeding, and continued 6 hours post-feeding. The number of pacesetter potentials (PP, also designated as slow waves, basic electrical rhythm, or electrical control activity) were counted and expressed as cycles per minute. The action potentials (AP, also referred to as spike potentials, fast activity or electrical response activity) associated with PP were identified and expressed as a percentage of the PP frequency. Rumen and abomasal fluid were obtained at hourly intervals and VFA's measured by chromatography. Variations in abomasal motility and VFA concentration with the different rations evaluated will be presented, viz:

Contrary to Swenson's findings we did not see an increase in abomasal contractions during a corn silage diet, neither on grass diet. We can therefore seriously question the theory that cows on an increased concentrate diet have decreased abomasal motility which predisposes them to abomasal displacement. We are now studying the effect of feed restriction of similar diets, diets of difference as far as hay, corn silage and either one of alfalfa hay on abomasal motility and possibly predisposed abomasal displacement.

Question: How are you doing this?

Answer: We have three cows and three diets and each cow is on a diet. We change diets in 10-14 day periods and put a different cow on a different diet. During that time we monitor abomasal motility.

Effect of GnRH and PGF2 alpha on Reproduction in Postpartum Dairy Cows

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Thirty dairy cows were injected intramuscularly with 100 mcg gonadotropin releasing hormone (GnRH) at 10-16 days postpartum followed by 25 mg. prostaglandin F2 alpha (PGF2 alpha) 14 days later. Twenty-nine other dairy cows (controls) were treated in a similar manner but saline was injected rather than GnRH or PGF2 alpha. Blood samples were taken for progesterone analysis before each injection and approximately 30 hours after the PGF2 alpha or second saline injection. The reproductive tract was evaluated by rectal palpation at the time of each injection. Only cows without obvious uterine infection were used and any pathological conditions that developed subsequently were treated after the experimental period. The cows were inseminated at the first estrus after 35-40 days postpartum.

Fourteen days after the administration of GnRH, 20 out of 28 cows showed an increase in plasma progesterone to greater than 1 ng/ml as compared to 14 out of 28 controls (P 0.05). Mean plasma progesterone concentrations for cows that showed an increase in plasma progesterone 14 days after GnRH or saline administration were 3.53 ng/ml for treatment cows and 2.64 ng/ml for controls (P 0.05). Thirty hours after PGF2 alpha injection, 20 out of 22 cows with active corpora lutea showed a decline in plasma progesterone to less than 1 ng/ml as compared to 3 out of 13 controls (P 0.01). There were no significant differences between the two groups in interval to first observed estrus, interval to first service, first service pregnancy rate, services

per conception, days open, incidence of follicular or luteal cysts, incidence of repeat breeders or number of reproductive culls. It appeared that the treatments in this experiment would not be economically beneficial as long as cows with reproductive tract abnormalities were promptly diagnosed and treated.

Results of Oral Selenium Supplementation in Cattle:

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Recent investigations by researchers at the University of Idaho Department of Veterinary Science have revealed extremely low tissue selenium levels in cattle maintained on forage grown on selenium deficient areas in Idaho and Washington. In these areas, white muscle disease is a yearly occurrence unless parenteral supplementation is administered to neonatal calves. The FDA has approved addition of selenium to feeds at the rate of 0.1 ppm and in salt at concentrations of no more than 20 ppm for cattle. We have placed pregnant cattle on oral selenium supplementation in salt at the rates of 20 ppm, 50 ppm, and 90 ppm, respectively, and monitored the whole blood selenium by using the glutathione peroxidase test prior to supplementation and at varying intervals thereafter. Significant elevations of tissue selenium were evident 60 days following initiation of selenium supplementation using levels of 50 ppm and 90 ppm. Very little or no response was seen at levels of 20 ppm. Calves from dams that had access to a 90-ppm selenium-salt mix were blood sampled within three days of birth and found to have adequate tissue selenium levels, suggesting that in the bovine animal, significant placental transfer occurs.

Our next research project will include monitoring calf weight gain and neonatal disease conditions associated with different levels of selenium supplementation.

Question: Were the blood levels measured beyond 6 months?

Dr. South: Yes, we have several herds on record and the blood levels tend to go down. Now, if you mean after the selenium is removed from the salt, they will peak regarding the consumption of salt but you can hold them practically at any level by this method — by either increasing or decreasing consumption.

Prevalence of Paratuberculosis (Johne's Disease) in Illinois Cattle Herds:

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There has been an increasingly severe clinical problem with paratuberculosis for several purebred beef breeders who are clients of the Field Service Section, Department of Clinical Veterinary Medicine, College of Veterinary Medicine, University of Illinois. Several approaches have been made to estimate the significance of the disease and its impact on both management and health status of these herds. These methods include direct staining of feces, fecal culture, intravenous johnin testing, biopsy and culture of gastroduodenal tissues and mesenteric lymph nodes, serological procedures, and

necropsy. Preliminary studies to assess the significance of paratuberculosis in Illinois in herds without previous history of clinical Johne's disease indicated one third (5/15) had one or more cows shedding the causative organism. Based on this finding, a statistically designed random sampling study was begun to assess the extent of the disease in Illinois cattle herds. Partial results at this time indicate approximately 31% of Illinois herds sampled have one or more cows shedding *Mycobacterium paratuberculosis*.

Weight Changes of Male Dairy Calves Following Zeranol Implants

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Abstract

In a trial to determine the effect of zeranol implants on weight gains from birth to 180 days of age, 269 male Holstein calves were assigned randomly to one of three groups: a) 56 intact calves, b) 106 castrated calves implanted at birth and again at 90 days with 36 mg zeranol, and c) 107 castrated controls. All calves were weighed at 0, 28, 56, 90, and 180 days of age. Zeranol implanted steers averaged 9.2% greater average daily gain at 90 days and 9.5% greater at the end of the trial than control steers. Intact male calves' weight gains were intermediate between the two steer groups. There was no correlation between implant status, total protein of blood serum, mortality, birth weight, or parity of the dam. During the first 180 days of age, implanting Holstein calves with zeranol at birth and repeated at 90 days can return upwards of \$14.89 per dollar invested. (Key words: Zeranol, dairy beef, total serum protein, colostrum, mortality, weight gain.)

Introduction

Most newborn dairy bulls are sold to commercial veal growers within a week of birth. Others are fed milk or milk replacer for 4 to 8 weeks and then pastured and grain fed until slaughter. Dairy bulls can perform as well as beef calves in the feedlot (17). Because most bull calves do not stay in the herd, dairymen usually have little interest in them and their colostrum intake is often inadequate.

To achieve maximum health and productivity, calves must receive adequate amounts of high-quality colostrum within 12 hours of birth. The benefit of colostrum in prevention of neonatal morbidity and mortality is