ANIMAL HEALTH


Twenty 2-yr.-old Holstein heifers were divided into five groups of four each and fed and managed in a normal, practical manner, except that four groups were given daily doses of NaF equal to 1.0, 1.5, 2.0, and 2.5 mg. of fluorine per kilogram of body weight, respectively. The control group ingested 0.15-0.3 mg. fluorine per kilogram. These amounts were equivalent to 7.3, 33.6, 44.7, 60.4, and 85.6 p.p.m. of the dry matter of the rations consumed. Records of milk production for six lactations are presented.

There was no indication that greater levels of fluorine within the limits tested affected milk yields. The control group averaged higher in fat test and fat yield than the treated groups, but this was believed due to the chance allotment of higher-testing heifers to this group. Conception rates of all groups were normal, with the control group being the lowest. Calves were normal in size and viability in all groups. Weight gains from 2 to 7 yr. were normal in all groups.

Urine fluorine concentrations varied widely within groups but, on the average, progressively higher fluorine feeding produced higher urine fluorine values. The normals averaged 2.6 p.p.m. Low levels of fluorine gave urine concentrations of 10-15 p.p.m., and levels high enough to cause damage to the cows averaged over 20 p.p.m. The most striking changes occurred in the incisor teeth, with excessive wear and motting present in the third and fourth pairs of cows fed 2.0 mg/kg. The molar teeth of these cows showed no significant abnormalities. Other signs of toxicity noted were the "strained" attitude of most of the cows on the two highest levels, a rough coat and tight hide (especially during heavy lactation), and exostoses and lameness of cows on the highest level of fluorine.

All cows were slaughtered during their sixth lactation and bone and soft tissues examined for fluorine and histological abnormalities. With the exception of high fluorine contents, the only significant abnormalities observed were irregular bone structures in cows on the highest fluorine intake. These studies indicated that the borderline intake of fluorine for the production of toxicosis is about 2.0 to 2.5 mg. per kilogram body weight, or 60-85 p.p.m. in the dry feed.

E. W. Swanson


The blood of 35 cows with varying degrees of ketosis was analyzed for acetone, sugar, calcium, and magnesium. Ill cow's with blood acetone bodies above 45 to 50 mg. %, a statistically significant depression of blood calcium was observed. Magnesium also decreased at the highest acetone levels, but the correlation between it and acetone was not significant. Data from three cows were presented to show the relationship between reduced feed intake, hypocalcemia, and clinical signs of ketosis. Marked clinical signs were most evident when feed intake and blood calcium were low. If the blood calcium level and feed intake were normal, signs of ketosis were not evident, even though blood acetone was high.

E. W. Swanson


Clinical observations indicated that on many New York farms ketosis in milk cows was associated with butyric acid silage. A method of assaying for acetone was developed and silage from 15 silos was analyzed. Farms which had the highest levels of acetone in the silage also had the highest incidence of ketosis in the herds. High acetone content was found in corn silage as well as grass silage, but highest levels were observed in grass silage, which contained excessive butyric acid.

E. W. Swanson

Homogenates were made from 5–10 g. samples of liver tissue removed by incision from normal, lactating, and ketotic cows. Oxygen uptake of the liver homogenates was determined by the direct Warburg method on control samples as well as on those with added substrates, glucose, acetate, propionate, and acetoacetate. Glucose did not increase liver homogenate oxygen uptake, but acetate and acetoacetate did. Results with propionate were variable. The differences between normal and ketotic livers were quantitative more than qualitative. Oxygen uptake of ketotic liver was about one-half of normal with all substrates. An experiment with radioactive acetate showed that acetate utilization was not proportional to total respiration. Recovery of normal liver metabolism was followed in one cow for 5 wk. after the ketosis samples were removed. Normal appearance of the liver returned before normal metabolism.

E. W. Swanson


Puerperal uterine motility was determined in 19 normal cows by means of a 4-in. rubber balloon placed in the uterine horn as early as 2 hr. postpartum. Recordings made at intervals through 72 hr. showed that strong uterine contractions occurred initially at the rate of 14 per hour, then gradually reduced to less than one per hour at 42 hr. With time postpartum, the contractions were of less amplitude as well as less frequent. The corpora lutea of six cows were removed at 215 to 242 days of gestation, to cause early parturition and retention of placenta. Placenta was retained by five of the six cows. All of these cows had higher than normal rates of uterine motility, averaging 19 strong contractions per hour. The rate of contractions remained high through three days of observations, but the amplitude decreased. The contractions were also undulating and tetanic, rather than simple and smooth, as in the normal cow.

E. W. Swanson


The preface to the second edition of this book states that it differs from the first primarily in the addition of new material. The book is divided into 12 chapters. Chapter One is concerned with practical pointers for owners. Remaining chapters deal with infectious and noninfectious diseases of cows, bulls, and calves.


The author reports that casein or casein-based products can be used as stabilizers for the newer latex-based paints. The necessity for cooperation between the paint makers and casein manufacturers to assure the successful use of casein as a stabilizer is emphasized.

A. W. Rudnick, Jr.

DAIRY BACTERIOLOGY


To determine if Streptococcus lactis produces inhibiting or stimulating compounds, a medium was inoculated with a dilute suspension of S. lactis and the test organism, Lactobacillus lactis. The mixture was incubated in Petri dishes at a low temperature to permit growth of S. lactis and then at a higher temperature to encourage growth of the test organism. The plates were examined for growth of the test organism. A clear zone around S. lactis colonies was considered as evidence of inhibition. Increased growth at the colony indicated production of stimulatory substance.

In samples of raw milk and cheese from various areas of France it was found that 20 to 25% contained strains of S. lactis which produced inhibitory substances, but these were only about 2% of the total organisms studied. On the other hand, many of the samples contained S. lactis strains that stimulated the growth of the lactobacillus.

A. W. Rudnick, Jr.


Use of sorbitol monolaurate (Tween 20) made possible the preparation of media in which fat was in a fine and stable state of emulsion. The product was nontoxic to two types of lipolytic bacteria and one mold.

A. W. Rudnick, Jr.

DAIRY CHEMISTRY


One part of milk is diluted with two parts distilled water and the mixture emulsified. A beam of light is directed through a color filter, then through a layer of the emulsion to a photo-electric cell. A meter measuring the stimulation of the cell is calibrated to read butter fat percentage directly.

R. Whitaker


The method of Ventura and White for simultaneous determination of iron and copper in blood has been adopted for use in dairy products. The method is based on the fact that iron gives a yellow and copper a red color reaction with 2-2 dipyrpylid. The two fractions are separated by the extraction of copper in an ethyl ether-aryl alcohol mixture. The separated fractions are examined spectrophotometrically with reference to a standard curve.

A. W. Rudnick, Jr.

PHYSIOLOGY AND ENDOCRINOLOGY


Phenothiazine (100 g.) was administered to five cows in starch-pressed boluses and to two cows as a capsule of micronized phenothiazine. Total collections of feces, urine, and milk were made until excretion of phenothiazine ceased. Much of the drug from the boluses passed through the cow unchanged; whereas, the micronized drug was more completely absorbed. From the boluses, 62.4% appeared in the feces, 19.0% in the urine, and 0.07% in the milk. From the capsules (micronized), 22.7% appeared in the feces, 54.3% in the urine, and 0.29% in the milk. Phenothiazine appeared in the first milking after dosing, as early as 5.5 hr., and was detectable for 71 hr. after boluses and 86.5 hr. after capsules. These elimination times corresponded to 79.0 and 71.5 hr. in feces, and 112 and 132.5 hr. in urine for boluses and capsules, respectively. As little as 2 p.p.m. could be detected in milk by colorimetric methods. Cows given 2-g. doses daily failed to show phenothiazine in their milk, and there was no indication that this dose level caused any abnormalities of milk. The cows given 100-g. doses secreted milk which readily developed a pink color while phenothiazine was being excreted.

E. W. Swanson

Three lots of six yearling heifers each were fed 0, 10, and 20 mg. of stilbestrol daily in a fattening ration for 148 days. No genital abnormalities were noted and no differences between lots in frequency or duration of estrus. After 148 days, half of the heifers were slaughtered and the others placed with a bull and stilbestrol feeding stopped. All heifers conceived and fetuses were normal at slaughter 91 days after stopping stilbestrol. Feces from the stilbestrol-fed heifers averaged 1.06 µg. stilbestrol per gram. The 10- and 20-mg. groups excreted 43.8 and 42.5%, respectively, of ingested stilbestrol in the feces. Another lot of 24 heifers was observed in three groups as above on a growing, rather than fattening, diet. Again, no genital abnormalities or pronounced abnormalities of behavior were noted. However, these stilbestrol-treated heifers were noted in estrus more often and for longer periods than were the control heifers. Three groups of seven each of 7-mo.-old bulls also were used to compare feeding 0, 10, and 20 mg. of stilbestrol daily. No effects attributable to stilbestrol treatment were observed in feed lot behavior, testicular size, or in fertility as measured by semen quality. 

E. W. Swanson

SANITATION AND CLEANSING


This apparatus is an arrangement of two tanks for flushing cleaning solutions through a pipeline. The solution is forced from one tank to the other by means of compressed air. An electrical system makes the operation automatic. 

R. Whitaker