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SURVEY OF DISORDERS AND BLOOD SELENIUM AND COPPER IN DAIRY CATTLE IN THE HASTINGS DISTRICT OF NEW SOUTH WALES

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In cattle, marginal selenium deficiency with blood selenium levels of 0.032 to 0.068 µg/ml is associated with high incidence of retained placenta, infertility, stiffness of joints and pre-parturient milk fever (Trinder *et al.*, 1973; Julien *et al.*, 1976; Gitter *et al.*, 1978). Simultaneous copper and vitamin E deficiency seem to accentuate these disorders (Gitter *et al.*, 1978).

A survey conducted during the year 1977-78 in the Hastings district of New South Wales indicated that in some dairy herds cattle in addition to exhibiting the above listed disorders showed loss of hair and photosensitization of skin, sporadic loss of appetite and tendency to abort after 4-5 months pregnancy. These herds formed a group of 1200 cows fed protected sunflower oilseed supplement (POS) from March, 1977 to April, 1978 with a purpose of producing cheese with elevated levels of linoleic acid in the fat. Each cow in addition to normal grazing received daily up to 2.7 kg POS as a sole concentrate or mixed with a small quantity of grain or lucerne hay.

From these disorders deficiency of selenium and possibly copper was suspected. Concentration of selenium in the blood of cows from 8 farms involved in POS feeding and with high incidence of disorders had a mean value of 0.047±0.018 µg/ml blood(range 0.036 to 0.082) compared with 0.066 ±0.024 (range 0.037 to 0.100) for 11 farms not involved with POS feeding. However, these latter herds were by no means free of incidences of retained placenta, abortions, and infertility. On one farm with 10-15% of the herd affected blood selenium content was 0.043±0.020 as compared to 0.103±0.026 µg/ml in POS fed cows at the CSIRO dairy farm at Prospect where no disorders were observed. Copper determination in the serum of 354 cows from different herds in the district indicated that 148 were deficient, 116 marginally deficient and 90 normal with copper contents of <0.5, 0.5-0.7 and >0.7 mg/ℓ respectively based on criterion used by the N.S.W. Department of Agriculture. Deficient cows showed depigmentation of hair and responded to copper administration.

These results, consistent with the observations of Trinder *et al.* (1973) and Julien *et al.* (1976), suggest that some herds in the Hastings district had blood selenium levels which could result in disorders of the type observed in this survey. Feeding of dietary supplements rich in protected polyunsaturated lipid increasestissue requirements of selenium and vitamin E and these combined with low blood copper and certain management practices tend to accentuate these disorders (Sheriff and Rankin, 1973).

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