



University Research Shows that Spring-born Calves Benefit From Fat-soluble Vitamin Injections.

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Calves depend on dams' colostrum and milk to provide adequate vitamins A and E.

Calves born to cows during winter, early-spring and drought conditions are more likely to be vitamin A and vitamin E deficient and experience "weak-calf syndrome" compared to calves born to cows grazing lush green pasture during summer and fall. During winter and early spring months and drought conditions, pregnant cows fed hay and other roughages consume much lower quantities of fat-soluble vitamins. This is due primarily to vitamin losses from stored roughages. Cows grazing green grass before and after calving generally consume adequate quantities of fat-soluble vitamins and pass those vitamins on to the calf through colostrum and milk. Without adequate vitamin intake by the gestating cow, colostrum and milk will be deficient in fat-soluble vitamins, especially vitamin E. According to Iowa State University Diagnostic Laboratory, calf serum vitamin E levels below 3.0 µg/mL and vitamin A levels below 0.25 µg/mL are considered deficient. Mineral supplements may contain vitamins A and D, but inadequate levels of vitamin E.

What causes Weak Calf Syndrome?

Calves born with 'weak calf syndrome' are often depressed and unable to stand, walk or nurse without assistance. Muscle weakness and diarrhea are classical signs of vitamin deficiencies in newborn calves. Fat-soluble vitamin deficiencies often go unrecognized as a causative agent for weak calves.

Research in Canada has reported a much higher percentage of newborn calves suffering from weak calf syndrome were vitamin E and vitamin A deficient compared to normal calves. Over 80% of calves that died within three days of birth had deficient levels of vitamin E and over 90% were vitamin A deficient. In living calves, 56% were deficient in vitamin E and 84% were deficient in vitamin A.

Adequate Fat-Soluble Vitamins Enhance Calf's Immune System and Muscle Function.

Kansas and Iowa research has shown that adequate levels of fat-soluble vitamins improve both cell-mediated and humoral immunity in young calves. Diarrhea thought to be caused by viral or bacterial infections may be due to deficiencies in fat-soluble vitamins. Skeletal and heart muscle degeneration are classical signs of vitamin E deficiency.

Results from Injecting Newborn Calves with Injectable Vitamins E, A and D.

To measure effectiveness of injecting newborn and young calves with fat-soluble vitamins, studies were conducted at University of Georgia-Tifton and North Dakota State to measure responses of newborn and young calves to VITAL E -A+D, an available source of fat-soluble vitamins, on vitamin E and vitamin A status. In the Georgia study, vitamin E status of newborn calves 48 hours after an injection of 5 mL VITAL E-A+D was improved 231%. Vitamin A status was also dramatically increased

($P < 0.05$). Those calves injected with BO-SE showed an improvement in selenium status, but no improvement in either vitamin E or vitamin A status. BO-SE when injected at recommended levels does not provide enough vitamin E to impact calf's vitamin E status.

In the North Dakota study, vitamin E and vitamin A status of spring-born calves was measured after an injection of 5 mL VITAL E-A+D. Forty-eight hours post-injection, vitamin E status was dramatically increased by 202% ($P < 0.01$). As in the Georgia study, initial serum vitamin A and vitamin E levels were considered deficient. In this study, VITAL E-A+D-injected calves had 5 lbs more gain compared to control calves after 23 days ($P < 0.10$).

Conclusions

Muscle weakness and diarrhea contribute to early calf losses. Fat-soluble vitamin deficiencies in the newborn calf may play an important role in the frequency and severity of these problems. Identifying these potential risk factors may help to determine ways to treat weak calf syndrome. Fat-soluble vitamin injections (VITAL E-A+D or VITAL E-Newborn) can help provide adequate fat-soluble vitamins during the critical first few weeks after birth.



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