Acta vet. scand. 1977, *18*, 563—565.

Brief Communication

INDUCTION OF SWINE DYSENTERY WITH A PURE CULTURE OF TREPONEMA HYODYSENTERIAE IN VITAMIN E AND SELENIUM DEFICIENT PIGS

Several successful attempts have been made to induce swine dysentery in pigs using pure cultures of Treponema hyodysenteriae (*Taylor & Alexander* 1971, *Harris et al.* 1972, *Akkermans & Pomper* 1973, *Hughes et al.* 1975). In these studies, either conventional or specific-pathogen-free pigs were used. In the present study, 2 approximately 8 weeks old conventional pigs (Nos. 1 and 2) were purchased and fed the same basic ration as used by *Teige et al.* (1977). In addition, 10 % cod liver oil was incorporated in the diet at each feeding. After a feeding period of 25 days rectal swabs were applied and examined for the presence of spirochaetes. The pigs were then fed a 3 days old primary and pure culture of T. hyodysenteriae on TSA–S400 medium (*Songer et al.* 1976). The culture originated from the colon of a pig with swine dysentery (Pig No. 4, *Teige et al.* 1977). Each pig received the agar contents of 5 petri dishes which were mixed with the food.

Pigs Nos. 1 and 2 developed diarrhoea 13 and 25 days after inoculation, respectively. Pig No. 1 was euthanatized 3 days after the onset of diarrhoea, pig No. 2 on the same day that diarrhoea was observed. At necropsy, fat tissue showed a moderate yellow discolouration. The contents of the colon had a soft and watery consistency and a green colour. There were fibrinous membranes on the mucosa which also showed evident hyperaemia especially in the cranial parts. Histologically, haematoxylin-eosin stained sections of the skeletal muscles showed moderate hyaline degeneration. The pseudomembranes in the colon consisted of mucus, fibrin, necrotic debris and epithelial and inflammatory cells. In the mucosa, numerous goblet cells, hyperaemia, dilatated glands of Lieberkühn and infiltration with mononuclear cells were seen. Acid picro–Mallory stained sections revealed fibrinoid material particularly in the external part of mucosa. Routine aerobic bacteriological examinations resulted mainly in

growth of Escherichia coli. Phase-contrast microscopy of the colonic mucosa revealed an abundance of spirochaetes, and anaerobic cultivation resulted in almost pure cultures of T. hyodysenteriae on the TSA–S400 medium. No spirochaetes were observed prior to inoculation.

The clinical signs and pathological changes observed in the inoculated pigs were in accordance with those described for swine dysentery (*Harris & Glock* 1972). The pigs were assumed to be in a state of vitamin E and selenium deficiency when inoculation took place as the diet contained a considerable amount of unsaturated fat and an extremely low quantity of selenium (*Teige et al.* 1977). This assumption is supported by the fact that lesions attributable to vitamin E and selenium deficiency were observed in the pigs (*Nafstad & Tollersrud* 1970). According to the findings of *Teige et al.* (1977, 1978) pigs in a state of vitamin E and selenium deficiency are more susceptible to swine dysentery than normal pigs. Therefore, the vitamin E and selenium state should be considered when pigs are used in experimental trials of swine dysentery, thereby making the test as sensitive as possible.

F. Saxegaard and *J. Teige jr.*
The National Veterinary Institute, Oslo, Norway.

REFERENCES

Akkermans, J. P. W. M. & W. Pomper: Aetiology and diagnosis of swine dysentery (Doyle). T. Diergeneesk. 1973, *98*, 649—654.

Harris, D. L. & R. D. Glock: Swine dysentery. J. Amer. vet. med. Ass. 1972, *160*, 561—565.

Harris, D. L., R. D. Glock, C. R. Christensen & J. M. Kinyon: Swine dysentery. I. Inoculation of pigs with Treponema hyodysenteriae (new species) and reproduction of the disease. Vet. Med. 1972, *67*, 61—64.

Hughes, R., H. J. Olander & C. B. Williams: Swine dysentery: Pathogenicity of Treponema hyodysenteriae. Amer. J. vet. Res. 1975, *36*, 971—977.

Nafstad, I. & S. Tollersrud: The vitamin E-deficiency syndrome in pigs. I. Pathological changes. Acta vet. scand. 1970, *11*, 452—480.

Songer, J. G., J. M. Kinyon & D. L. Harris: Selective medium for isolation of Treponema hyodysenteriae. J. clin. Microbiol. 1976, *4*, 57—60.

Taylor, D. J. & T. J. L. Alexander: The production of dysentery in swine by feeding cultures containing a spirochaete. Brit. vet. J. 1971, *127*, 58—61.

Teige, J. jr., K. Nordstoga & J. Aursjø: Influence of diet on experimental swine dysentery. 1. Effects of a vitamin E and selenium deficient diet supplemented with 6.8 % cod liver oil. Acta vet. scand. 1977, *18*, 384—396.

Teige, J. jr., F. Saxegaard & A. Frøslie: Influence of diet on experimental swine dysentery. II. Effects of vitamin E and selenium deficient diet supplemented with 3 % cod liver oil, vitamin E or selenium. 1978. In press.

(Received September 8, 1977).

Reprints may be requested from: Finn Saxegaard, the National Veterinary Institute, P.O. Box 8156, Oslo Dep., Oslo 1, Norway.