The coccidial Iecaspora suis has been incriminated as a cause of diarrhoea in the newborn pig in recent years (Bergerland; Sampson; Stuart 1977; Morin; Sanford; Roberts). The disease was characterized clinically by diarrhoea variable in severity, dehydration, and retarded growth in piglets from five to 15 days of age. Mortality rates were variable with mortality rates usually under 20%. The most common lesion was a multifocal atrophy and blunting of the villi in the jejunum and ileum with coccidial organisms present in variable numbers of epithelial cells covering affected villi. Experimental reproduction of the disease findings Iecaspora suis as a determinant cause of diarrhoea in piglets has been reported recently (Stuart 1980). This paper reports the experimental reproduction of porcine neonatal coccidiosis with sporulated oocysts of Iecaspora suis.

Thirty-eight piglets were obtained from a specific pathogens free (SPF) herd with no history of porcine neonatal diarrhoea since the beginning of the experiment. Feces from several pigs in the herd examined for the presence of coccidia were all negative. The piglets born naturally were allowed to suck their dams until two days of age and were then housed in individual isolation units. They were fed a commercial sow's milk replacer at a rate of 350 cc every eight hours. Twenty-eight piglets were inoculated at three days of age with 100,000 sporulated oocysts of Iecaspora suis. The piglets were obtained from four natural cases of porcine neonatal coccidiosis where no other enteropathogenic agents had been demonstrated. Ten piglets were used as control animals. Fecal samples were examined for coccidia daily; the appetite, stool consistency and general state of health were also recorded. Groups of piglets were killed from three to 15 days postinoculation and routine necropsies were performed. Histopathological examinations were performed on all levels of the digestive tract. Bacteriological examinations were also conducted and the E. coli isolates obtained were verified for their enteropathogenicity. The direct fluorescent antibody technique was used on frozen sections for the detection of TGE virus and rotavirus and direct electron microscopy examinations of their intestinal contents by negative staining were also performed.

Most of the inoculated pigs were anorectic and depressed four days postinoculation (p.i.). Diarrhoea was noted for the first time at four days (6 piglets), five days (1 piglet) and six days (2 piglets) p.i. The diarrhoea was initially yellow colored, soft and milky and was becoming watery and profuse within 24 hours. Appetite, stool consistency and general state of health were also recorded. Groups of piglets were killed from three to 15 days postinoculation and routine necropsies were performed. Histopathological examinations were performed on all levels of the digestive tract. Bacteriological examinations were also conducted and the E. coli isolates obtained were verified for their enteropathogenicity. The direct fluorescent antibody technique was used on frozen sections for the detection of TGE virus and rotavirus and direct electron microscopy examinations of their intestinal contents by negative staining were also performed.

Clinical signs and microscopic lesions observed in our experimentally infected animals were similar to those reported in spontaneous cases of porcine neonatal coccidiosis. The incubation period was five to seven days and the main clinical signs were depression, anorexia and a soft or watery, fatty, yellowish diarrhoea which lasted for several days. The patency period lasted from four to seven days and the most common was five days. The patency period could not be determined precisely with the type of experiment we have done but some of our pigs had shed oocysts for at least five to six days. These observations are similar to those reported recently by Lindsay. Microscopic lesions were characterized by a multifocal villous atrophy in the small intestine with the presence of coccidial organisms within the epithelium covering affected villi. These lesions needed to result from the destruction of mature absorptive cells during the peak of asexual reproduction which occurred around four to five days p.i. Reproduction of the villi seemed well underway in pigs killed nine to 12 days postinoculation (five to seven days after the beginning of diarrhoea) and very few organisms were still present. Results of this work confirm Iecaspora suis as a determinant cause of neonatal diarrhea in piglets.

The authors acknowledge the support of doctor Serge Farcière.