SUMMARY: Because of the high prevalence of *Cooperia punctata* in Brazilian herds, an experiment was conducted to examine the water, nitrogen balance and body composition changes, in calves infected with that nematode. Four helminth-free males Friesian calves, four-months-old received a daily infection of 20,000-*C. punctata* infective larvae, for a two-week period. Five days before and at the third week after the beginning of infection the calves were housed in metabolic cages for body composition and nutritional studies. They were all injected with 1 MBq of tritiated water per kg body weight. Fecal, urine and blood samples were daily collected during the metabolic observations. Egg counts and PVC examinations were conducted throughout the experiment. The calves were necropsied twenty-four days after the beginning of infection. The mean worm burden at necropsy was $26,643 \pm 12,028$ *C. punctata*. There were no changes in the PVC parameters. The first eggs were passed out in feces on the 15th day. The study showed a tendency for decrease in the half-life and fractional turnover rate as well as a significant ($p<0.05$) decrease in the total body water and fat free weight. The infection did not appear to affect adversely the water balance, although the mean fecal output and fecal water excretion were lower in the infected animals. A significantly ($p<0.05$) change in the nitrogen (N) balance was also observed, with lower N intake and reduction in the N retention by infected calves. A significant urinary N loss and decrease in the fecal N excretion affected these changes.

KEY WORDS: *Cooperia punctata*, pathophysiology, water metabolism, body composition, and nitrogen balance.