Clinical signs in buffalo calves infected with experimental $10^8$ CFU of *Salmonella* Dublin were evaluated and the viability of the experimental model in disease induction was verified. Ten to 26-day-old buffalo calves were randomly allotted into two groups of five animals: the control group and the experimentally infected calves with $10^8$ CFU of *Salmonella* Dublin group. Animals were submitted to physical examination before inoculation and at every 12 hours, during seven days after the infection. Rectal swab samples were collected for *Salmonella* Dublin isolation before the inoculation and so on daily until to get two consecutive negative results, in a interval of 15 days. No clinical signs of salmonellosis were detected in the control calves. In the infected group both, cardiac and respiratory rates ranged from 44 to 106 bpm and 15 to 53 mpm, respectively (values within normal range). Four out of five animals infected had fever, 60 to 96 hours after infection, with rectal temperature ranging from 40,0 to 41,0°C; 148 hours after the infection, the animals had rectal temperature normal. All animals had diarrhea, with mucus and/or bleeding in feces, 24 to 96 hours after the experimental infection with *Salmonella* Dublin; 172 to 244 hours after the infection it was observed spontaneous recovery from the diarrhea in those animals. Two infected calves (40%) showed mild dehydration 72 and 96 hours after infection, respectively. Only one animal showed loss of appetite and depression between 120 and 136 hours after infection. *Salmonella* Dublin was not isolated from fecal swabs of the control group. The isolation of the agent from rectal swabs of the infected group first occurred 24 hours after the infection. Although infected calves were already not showing any clinical signs of salmonellosis between 7 and 10 days after the experimental infection, it was observed that *Salmonella* Dublin was being eliminated for as long as 16 days after infection, which is an epidemiologically important data. Death was not observed in the animals infected with *Salmonella* Dublin. In conclusion, the oral administration of $10^8$ CFU of *Salmonella* Dublin induced clinical signs of salmonellosis in 10 to 26-day-old buffalo calves, in which the main clinical signs observed were diarrhea, fever and dehydration.