

### Ranitidine bismuth citrate and clarithromycin, alone or in combination, for eradication of *Helicobacter mustelae* infection in ferrets

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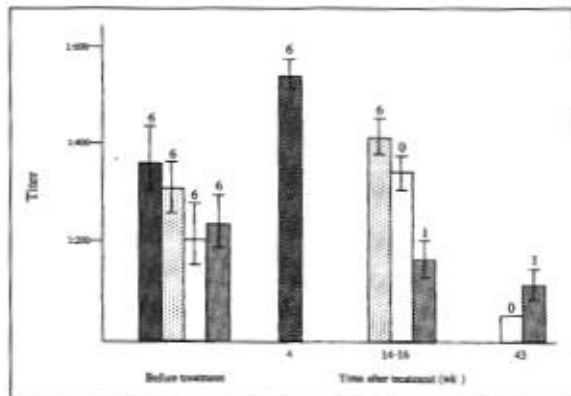


Figure 1—Geometric mean serum IgG antibody titers to *Helicobacter mustelae* in ferrets treated with ranitidine bismuth citrate and clarithromycin, alone or in combination (n = 6 for each group). For calculation of geometric mean titers, ferrets with titers < 1:64 were assigned a titer of 1:64. Error bars represent SEM; numbers above bars represent numbers of ferrets from which *H. mustelae* was isolated. ■ = 48 mg/kg of ranitidine bismuth citrate. ▨ = 24 mg/kg of ranitidine bismuth citrate. □ = 24 mg/kg of ranitidine bismuth citrate and 12.5 mg/kg of clarithromycin. ▩ = 12.5 mg/kg of clarithromycin.

The objective was to determine whether ranitidine bismuth citrate, clarithromycin, or a combination of ranitidine bismuth citrate and clarithromycin would be efficacious in eradication of *Helicobacter mustelae* infection in ferrets.

The number of animals was 60 seven-month-old ferrets. To determine dosages of clarithromycin and ranitidine bismuth citrate that would suppress

growth of, but not eradicate infection with, *H. mustelae*, ferrets (n = 6/group) were treated PO with clarithromycin or ranitidine bismuth citrate at various dosages. Efficacy of treatment was then determined by treating ferrets with clarithromycin alone, ranitidine bismuth citrate alone, or clarithromycin and ranitidine bismuth citrate. Gastric biopsy specimens were obtained before, during, and at various times after treatment and submitted for quantitative bacterial culture and histologic evaluation. Minimum concentrations of clarithromycin that inhibited 90% of the growth of isolates obtained before and after treatment were determined.

**Results**—Dosages of clarithromycin and ranitidine bismuth citrate that suppressed growth of *H. mustelae* were 12.5 and 24 mg/kg of body weight, PO, every 8 hours, respectively. Infection was not eradicated in ferrets treated with ranitidine bismuth citrate alone but was eradicated in all 6 ferrets treated with clarithromycin and ranitidine bismuth citrate and in 4 of 6 treated with clarithromycin alone. A decrease in susceptibility to clarithromycin was detected for *H. mustelae* isolates obtained after treatment. Mild or moderate antral gastritis was observed even in ferrets from which infection was eradicated.

**Conclusions and Clinical Relevance**—A combination of ranitidine bismuth citrate and clarithromycin was efficacious in eradicating *H. mustelae* infection from ferrets.

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