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Effects of oral administration of metronidazole and doxycycline on olfactory capabilities of explosives detection dogs
Eileen K. Jenkins, Tekla M. Lee-Fowler, T. Craig Angle, Ellen N. Behrend, and George E. Moore
American Journal of Veterinary Research, August 2016, Vol. 77, No. 8, Pages 906-912
(<https://doi.org/10.2460/ajvr.77.8.906>)

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OBJECTIVE To determine effects of oral administration of metronidazole or doxycycline on olfactory function in explosives detection (ED) dogs.

ANIMALS 18 ED dogs.

PROCEDURES Metronidazole was administered (25 mg/kg, PO, q 12 h for 10 days); the day prior to drug administration was designated day 0. Odor detection threshold was measured with a standard scent wheel and 3 explosives (ammonium nitrate, trinitrotoluene, and smokeless powder; weight, 1 to 500 mg) on days 0, 5, and 10. Lowest repeatable weight detected was recorded as the detection threshold. There was a 10-day washout period, and doxycycline was administered (5 mg/kg, PO, q 12 h for 10 days) and the testing protocol repeated. Degradation changes in the detection threshold for dogs were assessed.

RESULTS Metronidazole administration resulted in degradation of the detection threshold for 2 of 3 explosives (ammonium nitrate and trinitrotoluene). Nine of 18 dogs had a degradation of performance in response to 1 or more explosives (5 dogs had degradation on day 5 or

10 and 4 dogs had degradation on both days 5 and 10). There was no significant degradation during doxycycline administration.

CONCLUSIONS AND CLINICAL RELEVANCE Degradation in the ability to detect odors of explosives during metronidazole administration at 25 mg/kg, PO, every 12 hours, indicated a potential risk for use of this drug in ED dogs. Additional studies will be needed to determine whether lower doses would have the same effect. Doxycycline administered at the tested dose appeared to be safe for use in ED dogs.

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