

Sedative, cardiovascular, and anxiolytic effects of oral transmucosal dexmedetomidine gel in cats

A. Feldman, DVM; S. Saatcioglu; J. Char; A. Fagen, DVM, DACVB

Abstract

Cats are often underserved in veterinary medicine, in part due to avoidance of and resistance to veterinary handling (Bir et al., 2020). Conventional medication routes for sedation and anxiolysis (oral, intramuscular, and intravenous) can be difficult to administer and painful (Simini, 2000; Sivén et al., 2017). Oral transmucosal (OTM) administration of α_2 -adrenoceptor agonists offers a less invasive alternative. OTM dexmedetomidine gel, while well-studied in dogs (Hauser et al., 2020; Korpivaara et al., 2014; Korpivaara et al., 2017), has limited evidence supporting its use in cats (Carson et al., 2020; Messenger et al., 2018). The hypothesis of this study was that OTM dexmedetomidine gel would result in anxiolysis and sedation in healthy adult cats without clinically significant cardiovascular effects.

In this randomized controlled trial, 40 cats in residence at a shelter received 5-10 mcg/kg OTM dexmedetomidine gel (Sileo®) or placebo. Anxiety (adapted Fear, Anxiety, and Stress (FAS) scale (Ellis, 2022) and Cat Stress Score (CSS) (Kessler & Turner, 1997)) and sedation (Feline Multiparametric Sedation Score (Rutherford et al., 2022)) were assessed at baseline and 15, 30, 60, and 90 minutes post-administration.

Cats treated with OTM dexmedetomidine gel were less likely to experience worsening FAS at 30, 60, and 90 minutes (all $p < 0.001$), with the same pattern observed in CSS across all post-baseline timepoints (all $p < 0.003$) in ordinal mixed-effects models. Sedation was more common in treated cats at 60 minutes (50% vs. 5%, Fisher's $p = 0.003$), though overall mild. No excessive hypotension, bradycardia, or arrhythmias were noted.

Although effect magnitude was uncertain due to small sample size, the direction and statistical significance of treatment effects were consistent across timepoints. These results support clinically meaningful anxiolytic effects of OTM dexmedetomidine gel in cats, with minimal sedation and no apparent safety concerns.

References

- Bir, C., Orteza, M., Olynk Widmar, N. J., Wolf, C. A., Hansen, C., & Ouedraogo, F. B. (2020). Familiarity and Use of Veterinary Services by US Resident Dog and Cat Owners. *Animals*, 10(3), 483. DOI: 10.3390/ani10030483
- Carson, M. A., Pankratz, K. E., Messenger, K. M., & Gruen, M. E. (2020, July 15th). Efficacy of dexmedetomidine oromucosal gel to attenuate anxiety in client owned cats presented for routine veterinary care. Veterinary Behavior Symposium, Virtual.
- Ellis, J. J. (2022). Beyond "Doing Better": Ordinal Rating Scales to Monitor Behavioural Indicators of Well-Being in Cats. *Animals*, 12(21), 1-10. DOI: 10.3390/ani12212897
- Hauser, H., Campbell, S., Korpivaara, M., Stefanovski, D., Quinlan, M., & Siracusa, C. (2020). In-hospital administration of dexmedetomidine oromucosal gel for stress reduction in dogs during veterinary visits: A randomized, double-blinded, placebo-controlled study. *J Vet Behav*, 39, 77-85. DOI: 10.1016/j.jveb.2020.05.002
- Kessler, M. R., & Turner, D. C. (1997). Stress and adaptation of cats (*Felis silvestris catus*) housed singly, in pairs and in groups in boarding catteries. *Anim Welfare*, 6(3), 243-254. DOI: 10.1017/S0962728600019837
- Korpivaara, M., Aspegren, J., & Huhtinen, M. (2014, April 3-6). Effect of dexmedetomidine oromucosal gel for alleviation of canine acute fear and anxiety associated with noise at sub-sedative doses - A pilot study. BSAVA Congress, Birmingham, UK.
- Korpivaara, M., Laapas, K., Huhtinen, M., Schöning, B., & Overall, K. L. (2017). Dexmedetomidine oromucosal gel for noise-associated acute anxiety and fear in dogs-a randomised, double-blind, placebo-controlled clinical study. *Vet Rec*, 180(14), 356. DOI: 10.1136/vr.104045

- Messenger, K. M., Tamas, D., Carlson, A., Papich, M. G., Knych, H. K., Campbell, S., & Korpivaara, M. (2018, September 27th-30th). Pharmacokinetics and pharmacodynamics of buccally administered dexmedetomidine gel (Sileo) in healthy adult cats. AAFP Conference, Charlotte, NC.
- Rutherford, A.-A., Sanchez, A., Monteith, G., Tisotti, T., Aguilera, R., & Valverde, A. (2022). Description and validation of a new descriptive and multiparametric numeric rating scale to assess sedation in cats. *Can Vet J*, 63(6), 603-608.
- Simini, B. (2000). Patients' perceptions of pain with spinal, intramuscular, and venous injections. *Lancet*, 355(9209), 1076. DOI: 10.1016/s0140-6736(00)02045-6
- Sivén, M., Savolainen, S., Rönttilä, S., Männikkö, S., Vainionpää, M., Airaksinen, S., Raekallio, M., Vainio, O., & Juppo, A. M. (2017). Difficulties in administration of oral medication formulations to pet cats: an e-survey of cat owners. *Vet Rec*, 180(10), 250. DOI: 10.1136/vr.103991