

1 **Schirmer tear test is a reliable diagnostic tool in the general feline population**

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21 **Abstract**

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23 **Objective.** To test whether Schirmer tear test-1 (STT-1) can be falsely decreased in anxious cats
24 and evaluate the feasibility of shorter duration testing in this species. **Design.** Prospective cross-
25 sectional study. **Animals.** 176 cats examined in private practice ($n = 100$), feral clinic ($n = 56$)
26 and teaching hospital ($n = 20$). **Procedures.** STT-1 was performed in both eyes of each cat,
27 recording values in mm every 10-30 sec for 1 minute. STT-1 was performed twice at the
28 teaching hospital – 30min apart – in a stress-free room (non-stimulated) and a loud stressful
29 environment (stimulated), evaluating the cats' heart rate pre- and post- STT collection. Data was
30 analyzed with conventional statistics and a nonlinear mixed effect model. **Results.** STT-1 at 30
31 and 60 sec were strongly correlated ($r = 0.94$, $P < 0.001$). No significant differences were found
32 between STT-1 values of non-stimulated and stimulated environments ($P \geq 0.167$) despite
33 significant changes in heart rate ($P < 0.001$) that indicated sympathetic nervous stimulation. A
34 hyperbolic model of STT-1 kinetics was validated, allowing for extrapolation of readings
35 obtained in <60 sec and generation of reference values at various times. Median (95% predictive
36 interval) STT-1 at 30 and 60 sec were 9.1 (4.8-15.6) mm/30 sec and 14.3 (8.2-22.3) mm/min,
37 respectively. **Conclusions and Clinical Relevance.** STT is a reliable diagnostic test in the
38 general feline population. Results of STT-1 are not affected by sympathetic stimulation, and a
39 shorter duration of testing could be considered in selected cases (*e.g.* uncooperative patient).

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41 **Keywords:** Schirmer Tear Test; Dry eye; Keratoconjunctivitis Sicca; Sympathetic; Lacrimal
42 gland.