Baseline Values of Canine Tear Production Determined by Schirmer Tear and Phenol Red Thread Tests

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Abstract

Although research on canine tear production and dry eye has been reported in temperate countries in different breeds, there is no Malaysian data. On the average, at least two new cases of dry eye are diagnosed weekly at the University Veterinary Hospital (UVH) of the Faculty of Veterinary Medicine, Universiti Putra Malaysia. Currently in UVH the guidelines for the diagnosis of keratoconjunctivitis (KCS) and monitoring of response to treatment are based on recommendations for temperate countries. Thus the objectives of this study were to determine the Malaysian baseline values for canine tear levels using Schirmer tear test (STT) and phenol red thread test (PRTT), the relationship between and diurnal effect on STT and PRTT in dogs. The average baseline values for canine tear production in healthy local dogs in Malaysia with normal tear film breakup time (TBUT) were within the range of average baseline values reported in temperate countries. The average STT value for both eyes was approximately 22 mm/min and the PRTT was approximately 26 mm/15 s. There was poor relationship between STT and PRTT. This might be due to the presence of one or more confounding factors. The red colour change in PRTT was more intense when STT was performed first followed by PRTT and vice versa. The intensity of red colour change in PRTT was even more when performed in KCS dogs. This is because the intensity of the colour change in the phenol red thread is due to increasing alkalinity. Thus, KCS dogs had more alkaline tears than normal dogs. The lowest tear level was in the afternoon when diurnal study was conducted. Hence, KCS tests should be performed in the afternoon in order to obtain a more accurate measurement of tear level. Tear levels fluctuate when normal dogs were exposed in clinic with air-conditioned environment. Therefore, KCS tests should be performed immediately when dogs arrived at the clinic.

Keywords: dog, Schirmer tear test, tear film breakup time, keratoconjunctivitis sicca