

## Baseline analysis of stress levels of the Indian flying fox (*Pteropus giganteus*) in Sri Lanka

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Flying foxes (Pteropid bats) are known for disease transmission of viral diseases to other animals and to humans for decades. One suspected factor for the viral shedding in bats is physiological stress. Although flying fox colonies are found island wide, no study has been carried out to assess and interpret the stress hormone levels of bats in Sri Lanka. Glucocorticoids (cortisol and corticosterone) are known stress hormones which change in terms of physiological stress. Therefore, we assessed physiological stress levels of tested flying foxes using urinary cortisol measurements. Urine was collected non-invasively from two different roosts in two climatic zones; Viharamaha Devi Park Colombo – wet zone (6°54'44.4"N 79°51'45.0"E) (n=432) and Thaleimannar – arid zone (9°05'31.5"N 79°43'38.5"E) (n= 402) in Sri Lanka for a 6-month period from November 2018 – April 2019. Collected samples were inactivated using a standard inactivation protocol (RKI in-house SOP) under BSL 3 laboratory conditions at the RKI, before assessing cortisol levels. Urine creatinine was measured, and these creatinine values were used to normalize the cortisol concentration. Cortisol concentration ranged between 10.90 – 2912.17 ng/ml with average of 195.15 ng/ml in Thaleimannar roosting site and ranged between 4.89 – 2451.74 ng/ml with average of 173.85 ng/ml in Colombo roosting site. Overall urinary cortisol concentration of *Pteropus giganteus* ranges from 4.89 – 2912.17 ng/ml in Sri Lanka with average of 199.68 ng/ml. Results showed that cortisol concentration in urine tend to vary each month in both locations. This could be due to the environmental factors such as temperature, rainfall, and availability of food in the particular time period. It could also be due to physiological changes caused by mating and pregnancy. With these initial data, the study is continuing to include intermediate and dry climatic zones to get a clear understanding of the fluctuations of physiological stress in flying foxes in Sri Lanka.

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