NORMAL BLOOD CHEMISTRY OF THE SAKER FALCON (*FALCO CHERRUG*)

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Running title: Blood chemistry of the saker falcon.
Blood chemistry assays are nowadays considered an integral part of the basic clinical laboratory support required in the differential diagnosis of many pathological conditions in avian medicine (Kolllias and McLeish, 1978; Haliwell, 1981; Cooper et al., 1986, Ivins et al., 1986 and Allen, 1988). Although many different species of birds of prey are kept in zoological gardens, private collections and falcon centers, the published literature on blood chemistry studies is scarce and only includes reports from the red-tailed (Buteo jamaicensis, Kolllias and McLeish, 1978; Ivins et al., 1986) and Harris’ hawk (Parabuteo unicinctus, Ivins et al., 1986), bald (Haliaeetus leucocephalus) and golden eagle (Aquila chrysaetos, Ivins et al., 1986) and the Mauritius kestrel (Falco punctatus, Cooper et al., 1986). As with any other laboratory tests, the results obtained from blood chemistry assays are difficult to assess without reference values of clinically normal individuals and the knowledge of the blood chemistry response to different pathological conditions. This paper reports blood chemistry reference values from clinically normal saker falcons examined at the Sulman Falcon Hospital at Al-Areen Wildlife Park, Bahrain during 1987 to 1993.

Blood samples were obtained from 30 clinically normal adult female saker falcons admitted to the hospital for routine general health checks during the hunting season (October - February). Samples were obtained with the falcons under light sedation using 15 mg/kg of ketamine hydrochloride administered intramuscularly (Vetalar, Parke Davis Ltd, UK). A total of 0.5 ml of blood was collected from the right jugular vein of each individual using 23 gauge 1½” needles and 3 ml disposable syringes. After collection, blood samples were mixed immediately with the anticoagulant lithium heparin (1.8 mg/ml of blood) in commercially available 2 ml storage tubes. On the same day and within one hour of collection, a total of 10 blood chemistry assays were conducted on each sample using 32 µl of whole heparinized blood per assay and examined using a dry chemistry analysis system (Reflotron, Boehringer-Mannhein, Germany). Total protein and potassium assays were carried out on plasma samples obtained after centrifugation of plain capillary tubes containing whole heparinized blood for 3 minutes at 10,000 g using a microhaematocrit centrifuge (Hawksley, UK). For total protein, approximately 25 µl of plasma was necessary for each examination using a hand-held refractometer.
Potassium assays were examined using the dry chemistry analysis system as described above.

The results obtained in this study on clinically normal adult female saker falcons and the published values for other birds of prey are shown in Table 1.

Allen (1988) stressed that most of the normal reference values published on blood chemistry in birds of prey to date, do not take into consideration factors such as age, sex, body fat to muscle ratio, photoperiod, time of day and month, nutritional and reproductive status. These factors may have a significant effect on blood chemistry values and every effort should be made to meticulously register this information on clinical records. Comprehensive clinical histories and accurate diagnosis are essential to interpret the blood chemistry results during clinical investigations. Recently, a series of guidelines for the interpretation of laboratory findings were presented using six mammalian and six avian Orders as models, for which normal blood chemistry reference values were not available (Gascoyne et al., 1994). It was concluded that the use of clinical-database analysis of blood chemistry reference ranges may provide a useful alternative to more precise reference values for a species. Blood chemistry in birds of prey, despite the advances achieved in the last ten years in a limited number of species, is still in its infancy. More work is necessary to establish normal reference values for different species in order to understand the blood chemistry responses to different pathological conditions in birds of prey.

REFERENCES


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