

COMPARATIVE ANALYSIS OF I-STAT ALINITY V CHEM8+ CARTRIDGE AND COMMERCIAL LABORATORY BLOOD BIOCHEMICAL ANALYSES IN CHIMPANZEES (*PAN TROGLODYTES*) IN THE REPUBLIC OF THE CONGO

Susan A. Vallandingham, BS^{1}, Anneke Moresco, DVM, PhD^{1,2,3,4}, Yedra Feltrer-Rambaud, DVM⁵, Michelle Larsen, DVM⁵, Troy N. Tollefson, PhD⁶, Rebeca Atencia, DVM, PhD^{4,7}, and Kimberly Ange-van Heughten, PhD¹*

¹*Department of Animal Science, NC State University, Box 7621, Raleigh, NC 27695-7621, USA.*

²*Colorado Mesa University/WCCC Veterinary Technology Program, 2805 Blichmann Ave, Grand Junction, CO 81505, USA.*

³*Reproductive Health Surveillance Program, Morrison, CO 80465, USA.*

⁴*International Primate Health and Welfare Group (IPHWG), Madrid, ESP.*

⁵*Zoetis Inc, 10 Sylvan Way, Parsippany-Troy Hills, NJ 07054, USA.*

⁶*Mazuri Exotic Animal Nutrition, PMI Nutrition International, LLC, 4001 Lexington Ave N, Arden Hills, MN 55126, USA.*

⁷*Jane Goodall Institute, Tchimpanzee Chimpanzee Rehabilitation Centre, COG.*

Abstract

The aim of this study was to compare the values of eight nutrition-related blood parameters obtained with different analytical methods in a population of 44 sanctuary chimpanzees (*Pan troglodytes troglodytes*) residing in a forest environment in a range country in the Republic of the Congo (RoC). In December 2021, blood samples were collected from chimpanzees during routine health exams, and biochemical analyses were conducted using two different local RoC human commercial laboratories and an investigator owned hand-held analyzer (i-STAT® Alinity V) used on location at the sanctuary. The biochemical parameters measured and examined included: blood urea nitrogen (BUN), creatinine, glucose (GLU), calcium (Ca), phosphorus (P), triglycerides (TG), hematocrit (HCT), and hemoglobin (Hb). BUN, creatinine, GLU, HCT, and Hb were compared between the i-STAT Alinity V and Lab 1 while Ca, P, and triglycerides were compared between the two RoC labs. The five i-STAT parameters did not differ from Lab 1 ($P > 0.05$). It should be noted that BUN was below i-STAT detectable limits (< 3.0). Thus, Lab 1 (0.94 ± 0.090 mmol/L) and the i-STAT could not have directly comparable results although both indicated very low values for primates. However, Ca (mmol/L), P (mmol/L), and TG (mmol/L), differed between the two RoC lab with values of 2.1 ± 0.02 and 2.2 ± 0.02 ($P = 0.0008$), 1.5 ± 0.04 and 1.4 ± 0.04 ($P = 0.0220$), and 0.5 ± 0.07 and 1.3 ± 0.06 ($P = 0.001$), respectively. TG values were the most numerically different while Ca and P likely have no clinical difference medically. These data suggest that, in chimpanzee research, the i-STAT Alinity V may be a reliable and convenient tool for field work, based on its portability, real-time analysis capabilities, and consistency with laboratory analysis. Additionally, the analyses from available human laboratories may need to be further investigated.