Unlike other similar studies, what correlation was found between increased corticosterone levels and leukocyte response in hispaniolan amazon parrots?

a. Heteropenia

b. Lymphocytosis

c. Eosinophilia

d. Monocytosis

e. Basophilia

Answer: C

Barratclough, Ashley, et al. "Baseline plasma thromboelastography in Kemp's ridley (Lepidochelys kempii), green (Chelonia mydas) and loggerhead (Caretta caretta) sea turtles and its use to diagnose coagulopathies in cold-stunned Kemp's ridley and green sea turtles." Journal of Zoo and Wildlife Medicine 50.1 (2019): 62-68.

Abstract: Cold-stunning in sea turtles is a frequent natural cause of mortality and is defined as a hypothermic state due to exposure to water temperatures <12°C. Derangements of biochemistry and hematology data by cold stunning have been well documented, although the effects on coagulation have not yet been investigated. **The objectives of this study were to characterize the hemostatic state of non–cold-stunned sea turtles and to compare cold-stunned sea turtles at admission and after successful rehabilitation via a sea turtle–specific thromboelastography (TEG) protocol.** TEG enables evaluation of the entire coagulation process, and the methodology has recently been established in sea turtles. **Initially, 30 wild and apparently healthy sea turtles were sampled as controls: loggerhead sea turtles (*Caretta caretta*), *n* =17; Kemp's ridley sea turtles (*Lepidochelys kempii*), *n* = 8; and green turtles (*Chelonia mydas*), *n* = 5. In addition, paired TEG samples were performed on 32 *Ch. mydas* and 14 *L. kempii* at admission and prerelease after successful rehabilitation from cold stunning.** Statistically significant differences in reaction time, kinetics, angle, and maximum amplitude parameters in *L. kempii* and *Ch. mydas* species demonstrated that **the time taken for blood clot formation was prolonged and the strength of the clot formed was reduced by cold stunning.** These findings indicate that cold stunning may cause disorders in hemostasis that can contribute to the severity of the condition. Early diagnosis of coagulopathies in the clinical assessment of a cold-stunned sea turtle may influence the treatment approach and clinical outcome of the case.

Which of the following is true regarding thromboelastography (TEG) in cold stunned sea turtles?

1. The TEG protocol was developed from fresh sea turtle plasma samples.
2. Clot formation rate was significantly increased in cold stunned individuals.
3. Clot strength was significantly reduced in cold stunned individuals.
4. No improvement in TEG was observed from initial presentation to release.
5. Functional fibrinogen could not be assessed due to use of whole blood samples.

Answer: C

Parlier, Mark R., et al. "Evaluation of cell preservatives on the integrity of attwater's prairie chicken (tympanuchus cupido attwateri) whole blood samples over time." Journal of Zoo and Wildlife Medicine 51.1 (2020): 116-122.

Abstract: The processing of blood samples can be delayed during health assessments of wildlife populations in distant locations. The use of whole blood preservatives may be useful in these situations. However, there is scant information regarding their use in nonmammalian species. **This study tested the efficacy of two cell preservatives on whole blood collected from 12 Attwater's prairie chickens (*Tympanuchus cupido attwateri*).** The preservatives used were **Streck Cell Preservative© (SCP), a proprietary proteinaceous stabilizer developed for human flow cytology and validated in other mammalian species, and formalin**, which is commonplace in histopathology, but its use in whole blood has been limited to fish. **Grouped blood samples were treated with heparin, SCP, or formalin and analyzed at 0, 1, 4, and 7 days after collection for packed cell volume (PCV), complete blood count (CBC), and cellular morphology. SCP effectively preserved most cell types in Attwater's prairie chicken blood samples over a period of 7 days, with the exception of monocyte cell counts, which were significantly reduced from day 0. Formalin maintained total white blood cell counts at baseline levels measured by hemocytometer, but irregular staining characteristics prevented accurate analysis of differential counts or cellular morphology. Both preservatives altered PCV compared with the heparin control, but these values remained constant over time, highlighting the need for method-specific reference intervals.** The validation of SCP in Attwater's prairie chickens supports its potential for use in other avian species for the collection of accurate hematologic data when the processing of blood samples may be delayed.

Which of the following was observed during an evaluation of whole blood sample preservatives in Attwater’s prairie chickens (*Tympanuchus cupido attwateri*)?

1. Formalin was recommended for differential counts compared to control samples.
2. Packed cell volume was consistently increased in formalin preserved samples.
3. Heparinized whole blood samples did not stain well for hemocytometry.
4. Samples preserved with Streck Cell Preservative artificially increased monocytes.
5. Formalin preserved samples resulted in complete lysis of erythrocytes.

Answer: B

## EFFECTS OF SEASON AND POSTMORTEM CHANGES ON BLOOD ANALYTES IN PYRENEAN CHAMOIS (*RUPICAPRA PYRENAICA PYRENAICA*)

**Tvarijonaviciute** A, Marco I, Cuenca R, Lavín S, Pastor J.

J Wildl Dis. **2017** Oct;53(4):718-724.

**Which of the following blood parameters decreased in food deficient seasons in Pyrenean chamois?**

1. LDL-C
2. HDL-C
3. Total antioxidant capacity (TAC)
4. **Albumin**
5. NEFA

HDL-C, NEFA, and TAC significantly increased in food deficient season due to lipid metabolism. LDL-C did not significantly change.

**Which of the following parameters increased in serum samples collected in hunted Pyrenean chamois caracasses compared to live Pyrenean chamois in food abundant seasons?**

1. LDL-C
2. Albumin
3. **Haptoglobin**
4. NEFA
5. HDL-C

LDL-C, triglycerides, AChE, NEFA, albumin, IGF-1, cortisol, and PON1 were all decreased in postmortem samples. HDL-C was not different.

**The effects of migratory flight on hematologic parameters in northern bald ibises (*Geronticus eremita*).**

Stanclova G, Schwendenwein I, Merkel O, Kenner L, Dittami J, Fritz J, Scope A.

Journal of Zoo and Wildlife Medicine. 2017 Dec;48(4):1154-64.

**Which of the parameters increased in northern bald ibises after migration?**

1. Hematocrit
2. Lymphocytes
3. **Heterophils**
4. Eosinophils
5. Total white blood cells

Hematocrit, total white blood cells, lymphocytes, eosinophils decreased. Heterophils, basophils, and heterophil:lymphocyte ratio increased.

**Reference intervals for erythrocyte sedimentation rate, lactate, fibrinogen, hematology, and plasma protein electrophoresis in clinically healthy captive gopher tortoises (Gopherus polyphemus).**

Rosenberg, J.F., Wellehan Jr, J.F., Crevasse, S.E., Cray, C. and Stacy, N.I.

*Journal of Zoo and Wildlife Medicine*, 2018;49(3):520-527.

**Practice question**

In a recent study establishing reference intervals for markers of inflammation in gopher tortoises, which of the following was true?

1. Females had higher total solids measured on refractometer than males.
2. Males had higher lactate than females.
3. Immature animals had higher fibrinogen than adults.
4. Alpha-1 fraction had a higher peak on plasma protein electrophoresis in the winter than in the spring.
5. There was no significant difference between total solids measured by refractometer and total protein measured by biuret method.

**Paired biochemical analysis of pigmented plasma samples from zoo-kept american flamingos (phoenicopterus ruber) using a point-of-care and a standard wet chemistry analyzer.**

Gancz, A.Y., Eshar, D. and Beaufrère, H.

*Journal of Zoo and Wildlife Medicine*, 2019;50(3):619-626.

**Practice question**

Which plasma biochemical analyte can be considered useful on VetScan VS2 Analyzer in American Flamingos?

1. Calcium
2. Phosphorus
3. Albumen
4. Glucose
5. Potassium

Question:

1. Which of the following were found to be associated when establishing reference intervals for hematologic and biochemical parameters in free-ranging African lions (*Panthera leo*) in Kruger National Park, South Africa, compared with captive lions?
	1. Male, lower PCV
	2. Higher BCS, higher monocyte count
	3. Captivity, higher BUN
	4. Male, higher ALT
	5. Increasing age, lower BUN
2. List several advantages and disadvantages of point-of-care analyzers compared to laboratory analyzers and name 2 disease processes that may be associated with hypertriglyceridemia in birds.
	1. Advantages – small sample volume for small patients, rapid results
	2. Disadvantages - analyzer-specific reference intervals recommended, accuracy and precision rarely established in exotics
	3. Diseases – atherosclerosis, hepatic lipidosis, reproductive disease, hypothyroidism