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Presence of an Unusual Eosinophilic Staining Substance in the Blood of Snakes

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GENERAL NOTES

THE PRESENCE OF AN UNUSUAL EOSINOPHILIC STAINING SUBSTANCE IN THE BLOOD OF SNAKES

Telford (J. Florida Acad. Sci., 34:78-80, 1971) reported that certain Giemsa-stained blood smears from the lacertid, *Takydromos archedromoides*, collected from Japan, had a peculiar staining reaction. Rather than the usual light bluish-gray background seen on such preparations, some smears had a reddish appearance. This reaction could be easily detected by macroscopic examination of the stained smear. Microscopically, this odd background material appeared to be precipitated between the blood cells and ranged in color from a light pink to a brick red. All blood smears with this reaction came from 41 female lizards that, with three exceptions, had developed yolk follicles to some degree. Telford concluded that the reddish precipitate resulted from lipid materials mobilized during vitellogenesis. Ayala and Spain (Copeia, 1975:138-141, 1975) confirmed and furthered these observations with *Anolis auratus* from South America. Complete correlation was seen between the appearance of the reddish-staining reaction on blood smears and oogenesis of autopsied female lizards. It was suggested that use of such a blood smear technique would allow the following of reproductive cycles in reptiles without permanent removal of animals from the environment. Ayala and Spain speculated that the precipitated material was probably lipoprotein that is found in reptile blood during yolk deposition. This conclusion was based on the data of Dessauer and Fox (Amer. J. Physiol., 197:360-366, 1959) from studies of plasma constituents of ribbon snakes undergoing oogenesis. The latter investigators were, however, unaware of the reddish-staining reaction of blood smears from oogenic reptiles with Romanowsky blood stains. To our knowledge, this highly eosinophilic material has not been isolated or chemically identified.

In a survey for blood parasites of 100 snakes collected from Lonoke County, Arkansas, in May and June of 1975, seven animals had this reddish staining reaction. Blood for smears was obtained either by decapitation or tailclipping and stained with Wright's using an Ames Hematek automatic staining machine. Positive blood specimens were found from three *Natrix erythrogaster* (yellow-bellied western snake), one *Natrix rhombifera* (diamond-back water snake), one *Natrix grahami* (Graham's water snake), one *Thamnophis proximus* (western ribbon snake), and one *Elaphe obsoleta* (black rat snake). As far as we can ascertain, this reaction has not been reported from any ophidians or other reptiles from North America. Unfortunately, the *E. obsoleta* (a female) was the only snake with positive blood smears that was sexed. It was kept in captivity and gender was determined at autopsy a year later. The reddish-staining reaction was discovered after the six other positive snakes had been discarded. Therefore, any relationship between the presence of the reddish substance and oogenesis in snakes is not yet established. In this regard, it should be noted that, with the exception of the black rat snake, all of the snakes in this report are live-bearers as opposed to the previous reports with egg-laying lizards.

The staining reaction on the blood smears of the seven snakes ranged from a light background to an intense, bright red. A comparison can be made between a smear with the normal very light, transparent stained plasma (Fig. 1A) and a smear with the most intense staining reaction of the precipitated material (Fig. 1B). Not previously noted is that the eosinophilic substance seems to accumulate more around the erythrocytes than the white cells. Since the nature of this reddish-staining material has been only conjecture, it would seem in order to isolate and chemically identify this unusual substance that has been previously associated with the plasma of oogenic lizards only. The finding of this material in such large and readily available ophidians such as water snakes would make obtaining reasonable quantities of this substance feasible for future studies.

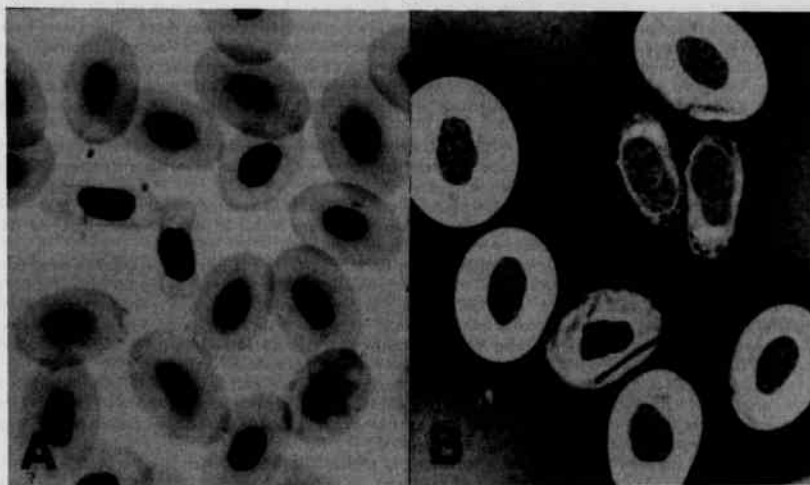


Figure 1. Blood smears stained with Wright's from *Natrix rhombifera* (A) with the usual transparent, lightly basophilic background and *Natrix grahami* (B) containing the eosinophilic-staining substance between the cells. Oil immersion (x1300).

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LONGEVITY OF WHITE BASS IN BEAVER RESERVOIR, ARKANSAS

A mark and recapture study to determine the movements of white bass, *Morone chrysops* (Rafinesque), in Beaver Reservoir, Arkansas, was conducted during the winters of 1967-68 and 1968-69. The recapture of four of these tagged white bass in 1974-76 produced new longevity records for this latitude. The oldest white bass previously recorded from southern United States waters (Center Hill Reservoir, Tennessee) was an 8-year-old (Webb and Moss, Proc. Annu. Conf. Southeast. Assoc. Game Fish. Comm. 21(1967):343-357, 1968). Beaver and Center Hill Reservoirs are at