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Cover Page Footnote
I thank Dr. Krishna Murthy, Forest Veterinary Officer, Tamil Nadu for his co-operation in sample collecting, and the Director of Kerala Forest Research Institute for encouragement.

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CHEMICAL COMPOSITION OF THE TEMPORAL GLAND SECRETION OF AN ASIAN ELEPHANT (*Elephas maximus*)

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ABSTRACT: The non-volatile chemical constituents of a temporal gland secretion of a male Asian elephant are reported for the first time, and they seem to be different, in part, from those of the African elephant.

The temporal gland is an organ uniquely found in living elephants. The gland is paired and is located on both sides of the head just over the temporal arches between the ears and the eyes. The active phase of the gland is marked by swelling of the surrounding skin and overflowing of a blackish fluid. The active time span of the gland and behavior of the animal during the period are known as musth. The nature and chemical composition of the temporal gland secretion (TGS) of the African elephant, *Loxodonta africana*, have been reported (Buss et al., 1976; Wheeler et al., 1982; and Rasmussen et al., 1984). Though the structure and histology of the temporal gland of the Asian elephant, *Elephas maximus*, have been described (Fernando et al., 1963), the chemical nature of the TGS of the Asian elephant has not yet been reported. The present paper reports the results (Table 1) of biochemical analyses of the TGS of an Asian elephant for the non-volatile chemical constituents.

TABLE 1. NON-VOLATILE CHEMICAL COMPOSITION OF TEMPORAL GLAND SECRETION (TGS) OF AN ASIAN ELEPHANT COMPARED TO THAT OF AFRICAN ELEPHANTS

Chemical constituent	TGS of: Asian	African (a)	African (b)
Protein (mg/ml)	25.000	52.750	42.000
Urea (mM/l)	3.840	4.680	---
Acid phosphatase (µM/hr/mg protein)	0.072	12.030	3.800
Alkaline phosphatase (µM/hr/mg protein)	1.193	---	---
Triglycerides (mg%)	15.000	---	4.000
Amylase (Somogyi units/100ml)	146.000	171.000	---
Lactic dehydrogenase (µM/hr/mg protein)	0.449	0.029	---
Cholesterol (mg%)	80.000	80.000	33.000
Sodium (mg%)	279.000	---	120.000
Potassium (mg%)	58.500	---	---
Calcium (mg%)	9.300	---	10.000

(a). After Buss et al., 1976 (b). After Wheeler et al., 1982

The TGS was collected from a captive 63-year old male elephant of the Forest Department at Topslip in Tamil Nadu. It was done by squeezing the swollen glandular region. The overflowing secretion was collected in sterilized tubes, sealed, placed in a glass thermos with ice and taken to the laboratory for analysis. Measurements and assays included protein (Lowry et al., 1951), cholesterol (Zaltkis et al., 1953), urea (Marsh et al., 1965), acid and alkaline phosphatases (Kind and King, 1954), amylase (Rinderknecht et al., 1971), triglycerides (Fletcher, 1968), and lactic dehydrogenase (King, 1965). Inorganic salts such as sodium and potassium (Varley et al., 1980) and calcium (Hawk et al., 1954) were also measured.

A glance at Table 1 shows that in about half of the chemical values (when they are present in all columns) there is agreement between the two species, whereas in the other half the values do not agree. Further studies are needed to better understand the differences between the chemical composition of the musth gland of the Asian and of the African elephant. Data on the non-volatile chemical composition of musth from one elephant is valuable but the analysis from others needs to be conducted. Furthermore, analysis of the volatile components of the musth gland is required to ascertain the function of this gland in the behavior of the Asian elephant during musth.

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