

BODY TEMPERATURE IN THE AFRICAN ELEPHANT AS RELATED TO AMBIENT TEMPERATURE

by

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Les températures corporelles d'éléphants africains mâles, immédiatement après leur immobilisation par de l'étorphine, variaient entre 32,5 et 37,5 °C et montraient une relation linéaire avec les températures ambiantes à un niveau considérable : $p < .001$. Cette grande variation est similaire à celle que l'on trouve chez les chameaux et remplit probablement la même fonction dans la conservation de l'eau et de l'énergie nécessaires pour la régulation des températures.

Because elephants are the largest living land mammals and, like man, are nearly hairless, they face unique problems in heat loss and control. For these reasons the body temperature of elephants has been the subject of considerable investigation.

Early studies of body temperature in the Asian elephant (*Elephas indicus*) were accomplished by inserting a thermometer at arm's length into the rectum for at least 1 minute (Benedict and Lee, 1936). These temperatures ranged from 97.4 to 98.8 °F [36.3 to 37.1 °C]. Fecal temperatures of 24 Asian circus elephants ranged from 35.9 to 37.2 °C (average 36.6 °C or 97.7 °F) (Benedict, 1936). Urine temperatures of 30 circus animals averaged 35.9 °C or 0.7 °C less than fecal temperatures. This difference was attributed to the heat of fermentation of feces in the rectum, and demonstrates the need to correct rectal temperatures by — 0.7 °C when comparing them with deep body (core) temperatures.

Since African elephants (*Loxodonta africana*) are seldom trained, data concerning their body temperatures have been scarce. Rectal temperature of a captive bull was recorded as 35.9 °C (Benedict, Fox and Baker, 1921). Rectal temperatures of nine animals shot 3 to 35 minutes previously ranged from 96.9 to 98.2 °F [36 to 36.8 °C] (Buss and Wallner, 1965). Rectal temperature of 25 bulls immobilized with Etorphine (M-99) plus acetylpromazine ranged from 95-100 °F [35 to 37.7 °C] (average 97.3 °F or 36.4 °C) (Pienaar *et al.*, 1966).

In the course of our study of herd movements in the Luangwa Valley of eastern Zambia we immobilized and marked a series of bull elephants using Etorphine alone. The drug was delivered by means