

SITES OF PRODUCTION OF FRUCTOSE AND CITRIC ACID IN THE ACCESSORY SEX GLANDS OF THE MALE MUSK SHREW, *SUNCUS MURINUS*

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Summary. The main source of citric acid in the accessory sex glands of the musk shrew (*Suncus murinus*) was the prostate and fructose was abundantly produced by the ampullary glands.

The morphology of the accessory sex glands of the male musk shrew (*Suncus murinus*) has been described by Deshpande (1959), and by Mathur & Goyal (1974). The accessory glands consist of a bilobed prostate, and paired ampullary and Cowper's glands. The prostate is a tubulo-alveolar gland with a small columnar secretory epithelium; the lobes open separately through ducts into the urethra. The ampullary glands are pronounced pear-shaped enlargements of the ductus deferens. The Cowper's glands are minute and open into the urethra in front of the bulb.

The present report deals with the sites of formation of fructose and citric acid in the prostate and ampullary glands of male musk shrews in breeding condition. Fructose was determined by the method of Roe (1934) as modified by Lindner & Mann (1960). Tissues were deproteinized with 80% ethanol followed by 0.3 N-Ba(OH)₂ and 5% ZnSO₄.7H₂O. The method of Ettinger *et al.* (1952) was employed for the estimation of citric acid. Tissues were deproteinized by homogenization in 0.5 N-perchloric acid followed by neutralization with 1 N-KOH (Reddi *et al.*, 1966). One lobe of the prostate and one

Table 1. Fructose and citric acid in the prostate and ampullary glands of the musk shrew

Gland	Fructose		Citric acid	
	Content (µg/organ)	Concentration (mg/100 g)	Content (µg/organ)	Concentration (mg/100 g)
Prostate	38.2 ± 1.1 (19.4-98.6)	21.6 ± 0.4 (11.5-35.9)	762.2 ± 34.0 (151.3-1844.0)	474.4 ± 21.0 (91.5-795.8)
Ampullary	399.7 ± 7.8 (215.2-627.6)	739.9 ± 13.2 (435.0-1173.0)	—	11.3 ± 0.8* (8.7-14.8)

Values are Means ± S.E.M. for 17 animals with the range in parentheses.

* Pooled tissues were analysed on four occasions.

ampullary gland was used for estimation of fructose and the other lobe and gland for citric acid. The results of the analysis are presented in Table 1.

There was great variation between individuals in the total content and the concentration of fructose and citric acid. Similar variations are reported to occur between individuals of other species (Mann, 1964), and are common in animals randomly caught in the wild (Reddi *et al.*, 1966; Rajalakshmi & Prasad, 1970).

Even though the prostate of the musk shrew secretes fructose and citric acid more of the latter is secreted than the former. The ampullary glands produce fructose in abundance, but citric acid only in negligible amounts. In the hedgehog, another insectivore, the 'internal prostate' produces citric acid but no fructose (Mann, 1964). The ampullary glands, in addition to other accessory glands, secrete fructose and citric acid in the bull and rabbit (Mann, 1964) and flying fox, *Pteropus giganteus* (Rajalakshmi & Prasad, 1970). In contrast to the musk shrew, the well-developed ampullary glands of the stallion are devoid of fructose (Mann, 1964).

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