

AS9.**REGIONAL VARIATION IN MORPHOLOGY AND MORPHOMETRY
IN THE EPIDIDYMIS OF THE GOAT**D.M.S. MUNASINGHE, V.K. GUNAWARDANA, A. HORADAGODA
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The epididymis, an essential organ of reproduction in the male is considered to have many functions. In order to determine the structure-function relationship of the epididymis, regional variation in morphology and morphometry was investigated under the light microscope.

Material was collected from 12 sexually mature goats at slaughter, and each epididymis was divided into seven segments. The segments were fixed in Bouin's fluid and processed for paraffin embedding. Sections 5 μm in thickness were stained with haematoxylin and eosin. For morphometric studies, five tubular cross sections having circular profiles were selected from each of the seven segments and measurements were made with the aid of a graticule attached to the eyepiece of the microscope. The parameters measured were the diameter of the tubule, diameter of the lumen, height of the epithelium, height of the stereocilia and the thickness of the smooth muscle encircling the tubule.

In all segments, three cell types were present in the epididymal duct. These were the principal cells, basal cells and 'halo' cells. The principal cells showed microvilli or stereocilia and are considered to have an absorptive function. Additionally, the initial segment of the epididymis showed angular apical cells and vacuolated clear cells. The results on morphometry are given in Table 1.

Table 1 - Morphometric Analysis (The number of samples is given in parenthesis)

| Mean \pm SD (μm) | Epididymal Segment | | | | | | |
|------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Tubular diameter | 376.5 \pm 77.9 (12) | 321.3 \pm 57.1 (12) | 298.4 \pm 56.5 (12) | 306.3 \pm 44.8 (12) | 319.5 \pm 44.1 (11) | 396.3 \pm 75.1 (12) | 520 \pm 105.7 (11) |
| Luminal diameter | 209.4 \pm 42.7 (12) | 193.2 \pm 38.1 (12) | 183.8 \pm 49.1 (12) | 163.3 \pm 34.6 (12) | 193.9 \pm 29.9 (11) | 302.8 \pm 78.2 (12) | 417.5 \pm 92.8 (11) |
| Height of epithelium | 78.8 \pm 22.1 (2) | 58.5 \pm 8.0 (12) | 49.8 \pm 12.3 (12) | 60.9 \pm 12.7 (12) | 54.2 \pm 11.1 (11) | 33.5 \pm 6.4 (12) | 25.0 \pm 6.9 (11) |
| Height of stereocilia | 15.1 \pm 3.2 (11) | 19.1 \pm 3.5 (11) | 12.4 \pm 2.6 (11) | 14.2 \pm 2.8 (11) | 11.1 \pm 2.2 (10) | 5.4 \pm 2.2 (10) | 4.0 \pm 1.3 (10) |
| Thickness of muscle | 7.6 \pm 4.5 (12) | 6.3 \pm 2.6 (12) | 8.2 \pm 4.4 (12) | 9.9 \pm 5.8 (12) | 9.8 \pm 5.2 (11) | 13.1 \pm 6.5 (10) | 21.2 \pm 11/5 (10) |

The tubular diameter was significantly larger in segment 7 compared to segments 2,3,4 and 5 ($P<0.001$) and the luminal diameter was greater ($P<0.001$) in segment 7 compared to segments 1 to 5. The increased thickness of the muscle layer in segment 7 and the increased length of stereocilia in segments 1 to 4 were also significant. The results suggest that the absorptive function of the epididymis resides in segments 1 to 4 while the final segment functions in storage and release of sperm through smooth muscle contraction.