



# Immunohistochemical investigations of the autonomous nerve distribution in the testis of the camel (*Camelus dromedarius*)

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## Abstract:

The distribution of autonomous nerves in the testis of the camel was studied by immunohistochemical methods. A total of 26 testes was collected during the different seasons of the year. As pan-neuronal markers, antibodies to protein gene product 9.5 and to neurofilaments are superior to antibodies against neuron-specific enolase and acetylcholinesterase histochemistry for the description of the nerves in the camel testis. Testicular nerves reach the camel testis by three access-routes as (1) funicular contribution, (2) mesorchial contribution and (3) as caudal contribution. The main target for testicular nerves is the arterial vascular tree of the organ, whereas all veins of testis and pampiniform plexus are devoid of any innervation in the camel. In the wall of the arteries, the nerves form a plexus at the media-adventitia border. The density of the arterial plexuses increases along the vascular tree: smaller septal and mediastinal arteries are better innervated than albugineal arteries and the latter better than the A. testicularis. The nerves in the septula testis, in the mediastinum and between the Leydig cells show clear seasonal changes, being particularly abundant in autumn and particularly scarce in spring. The nerves that reach the camel testis are unmyelinated and represent in the vast majority postjunctional sympathetic neurons. Cholinergic fibers are absent in the camel testis. Neuropeptide Y is the dominating peptidergic transmitter in the testicular nerves and colocalized with noradrenaline in the same axons. Vasoactive intestinal polypeptide-containing fibers reach the camel testis exclusively as parts of the caudal nervous contribution via the ligamentous bridge between testis and epididymal tail and are restricted to the caudal pole of the testis. Calcitonin gene-related peptide-positive axons are not frequent in the camel testis; nevertheless, they seem to be the most important sensory pathway of this organ.

## Keywords:

Testis; Innervation; Camel; Immunohistochemistry

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