

Effets de la castration sur l'immunoexpression de la gélatinase B (MMP-9) dans les vésicules séminales du Mérion de Libye (*Meriones libycus*)

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INTRODUCTION

MMPs are involved in physiological and pathophysiological tissue remodeling. They play important roles in reproduction from development to adulthood. We studied, immunohistochemically the MMP-9 in order to demonstrate its involvement in the physiology and seasonal activities of *Meriones libycus* seminal vesicles,

MATERIALS AND METHODS

The Libyan jird was collected in the breeding period and the resting season from Béni-Abbès area, in the Algerian Sahara. The seminal vesicle, also taken from castrated Libyan jird for 3, 30, 50 and 90 days in spring, was submitted to the indirect immunohistochemical protocol with amplification with streptavidin-biotin-peroxidase and AEC as chromogen.

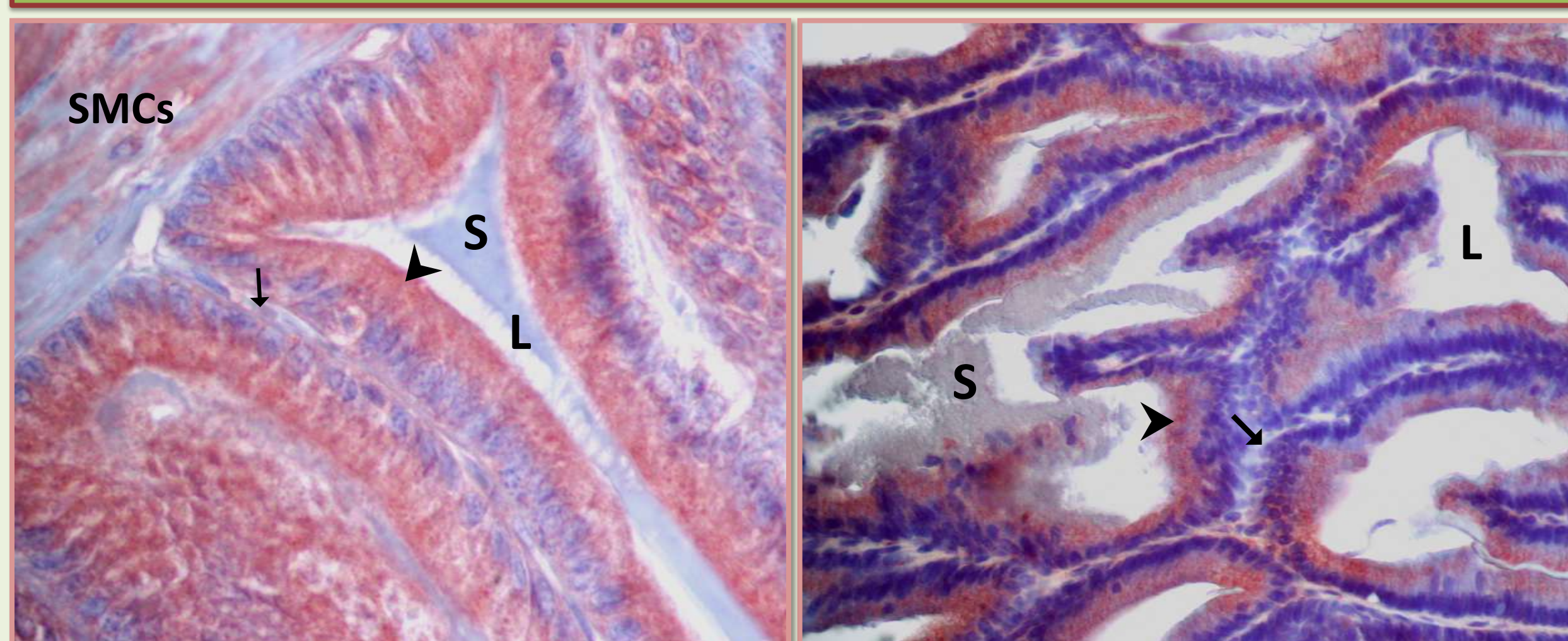
Meriones libycus is a nocturnal herbivorous and granivorous Saharan Rodent belonging to the Gerbillidae family. It lives in a superficial burrow arranged under the most important bushes. So, it benefits from the shade procured by the plants (Petter, 1961).

> **Breeding period:** spring and early summer.

> **Resting phase:** late summer, autumn, late winter.

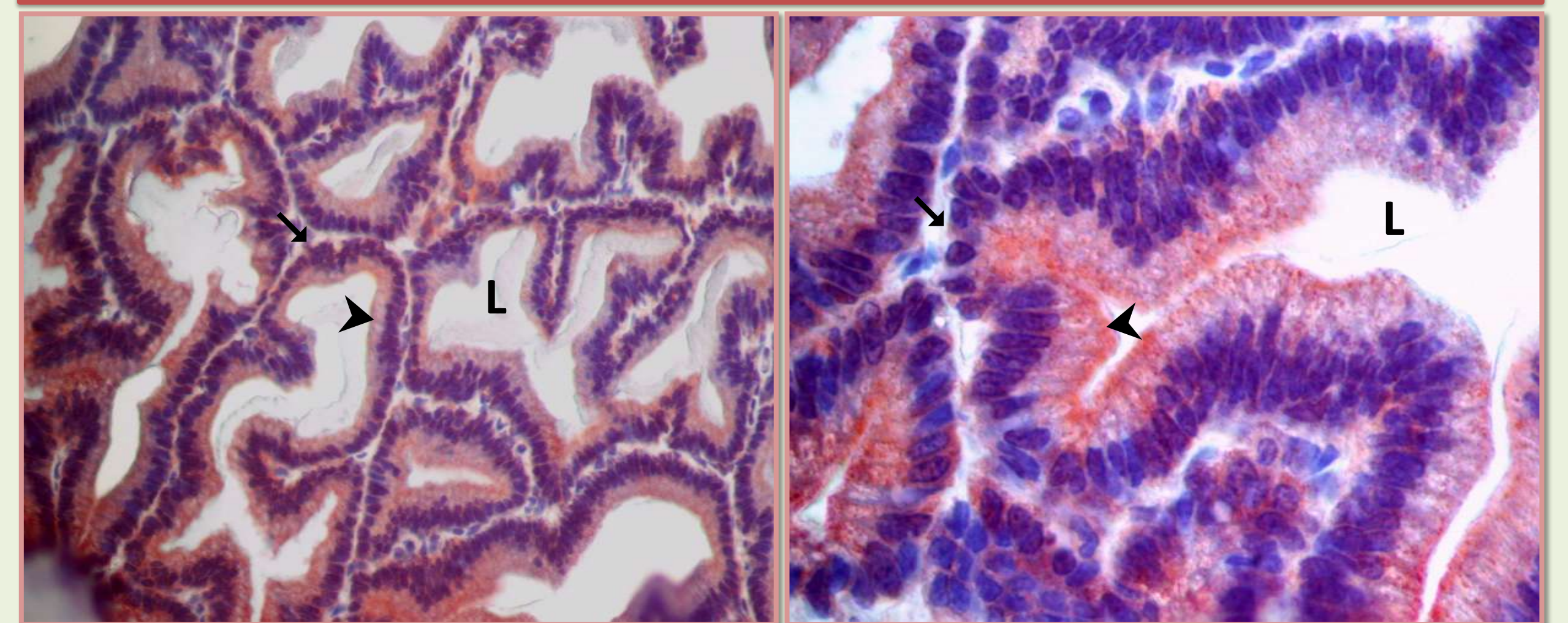
RESULTS

MMP-9 immunoreponse in the seminal vesicle of *Meriones libycus* in the breeding period



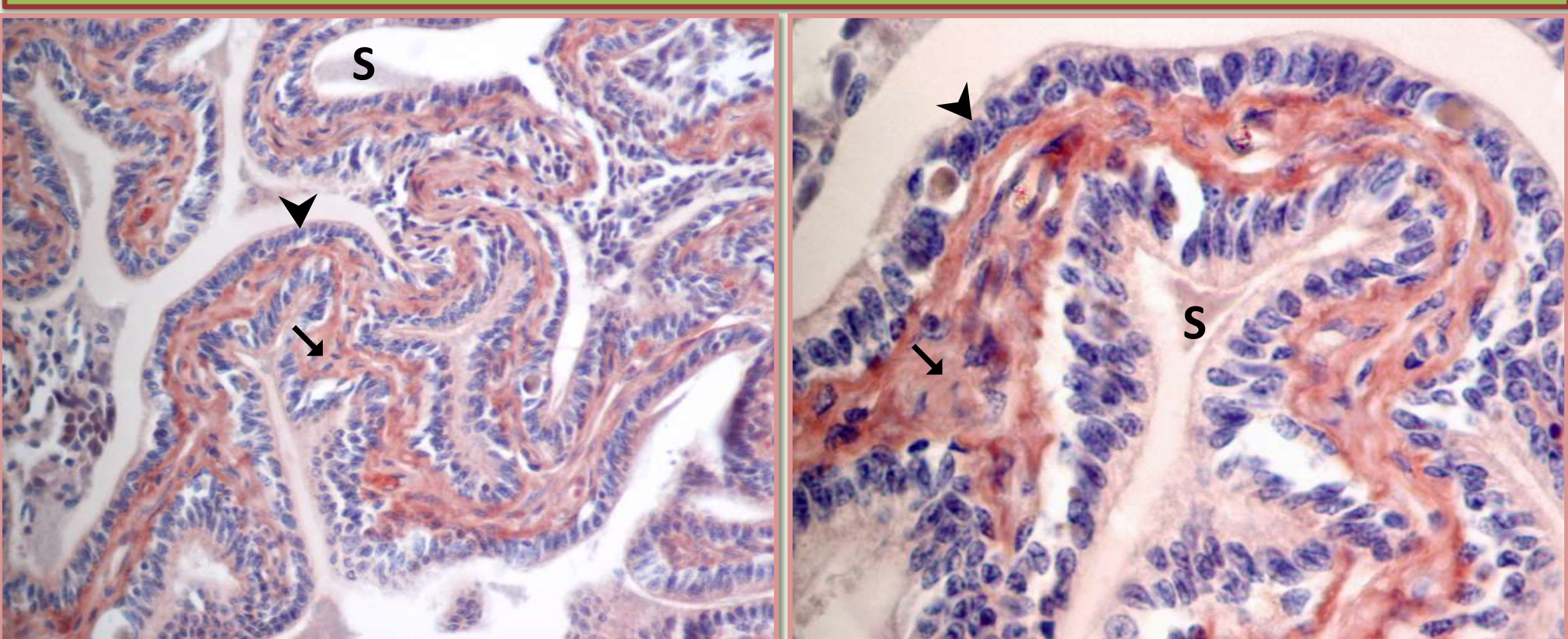
A non immunostained secretion (S) is observed in the Lumen (L) of the seminal vesicle. Luminal epithelial cells (▶) and smooth muscle cells (SMCs) show a strong immunohistochemical staining. No immunoreactivity in the extracellular matrix (↘).

MMP-9 immunoexpression in the seminal vesicle of three days castrated *Meriones libycus*



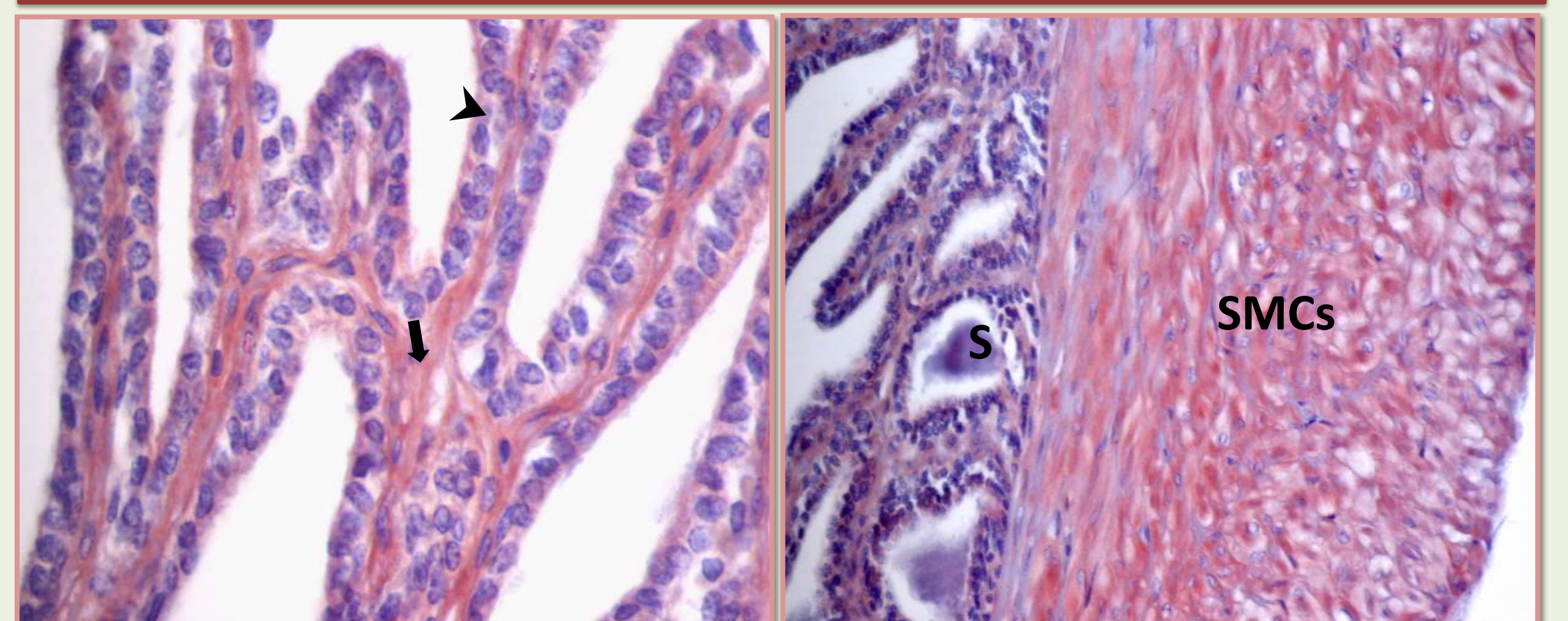
A weak positive immunohistochemical staining is seen in the luminal epithelial cells (▶). The extracellular matrix (↘) show a negative immunoreactivity.

MMP-9 immunodetection in the seminal vesicle of *Meriones libycus* in quiescence season



Luminal epithelial cells (▶) with a reduced size and a strongly attenuated immunolabeling. The extracellular matrix (◄) shows an important immunoreactivity. Secretion (S) is not immunostained.

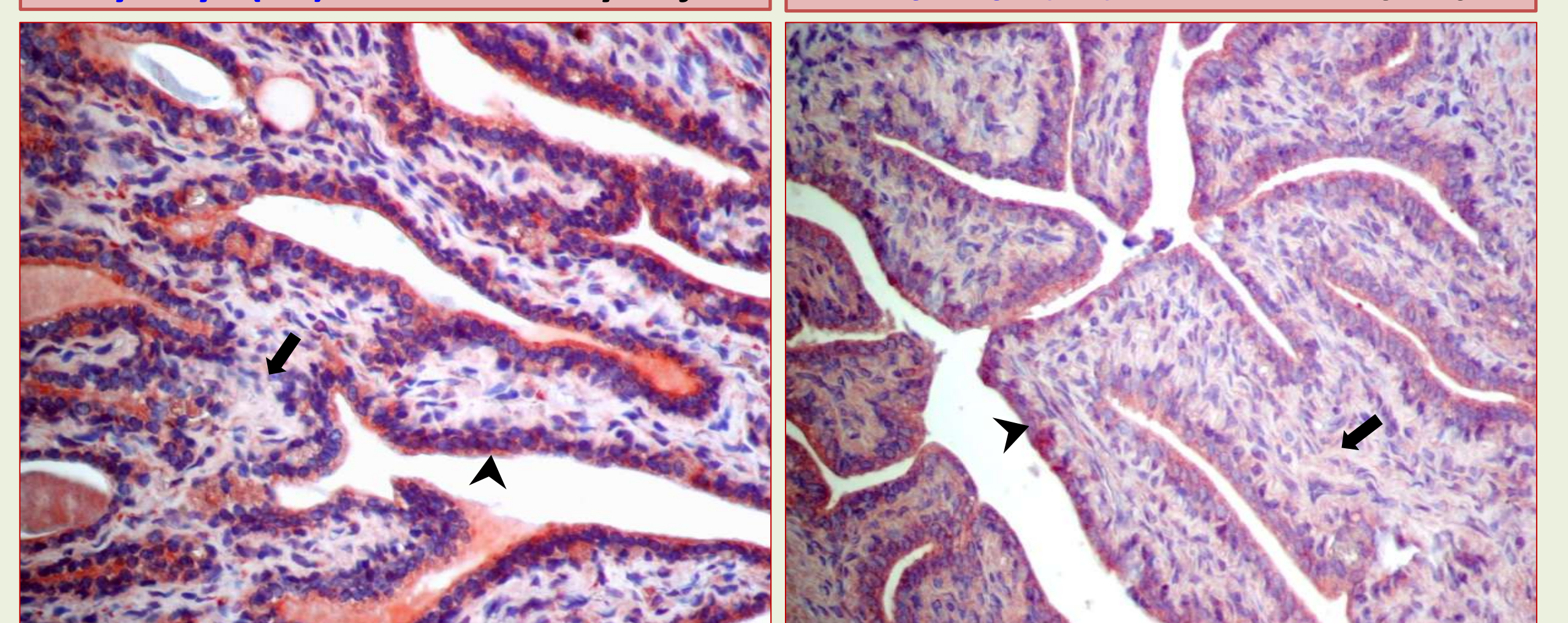
MMP-9 immunostaining in the seminal vesicle of thirty days castrated *Meriones libycus*



The pattern of the immunostaining is the same as that of the quiescence period:
 • Luminal epithelial cells (▶) show a very weak immunolabeling.
 • The extracellular matrix (◄) and smooth muscle cells (SMCs) show an important immunoreactivity. Secretion (S) is not immunostained.

MMP-9 immunoreaction in the seminal vesicle of a long period castrated *Meriones libycus*

Fifty days (50) castrated Libyan jird / **Ninety days (90) castrated Libyan jird**



Disappearance of the MMP-9 immunostaining from the extracellular matrix (◄) and its concentration in the epithelium (▶)

DISCUSSION AND CONCLUSION

In the **breeding period**, the MMP-9 is highly expressed in luminal epithelial cells and is absent in the extracellular matrix (ECM) and the secretion. This immunoreaction decreases in the three days castrated *Meriones libycus*. In the **quiescence season**, MMP-9 immunoreponse decrease dramatically in epithelial cells and is delocalized in the ECM; SMCs also show a net immunoreaction. This pattern of immunolabeling persists after **thirty days** of castration. However, following a **prolonged castration (50 and 90 days)** the immunoreactivity reappears in the luminal epithelial cells, with almost the same degree as in the active season and disappears from the ECM with a more apparent reduced immunoexpression. Similar results were obtained in the canine testis, epididymis and semen (Warinrak *et al.*, 2015). These results indicate a seasonal fluctuation in the expression of the MMP-9 and a dynamic tissue distribution. This allows us to stipulate a modulating effect of testosterone but not alone on the MMP-9 and the involvement of this enzyme in the physiology of the Libyan jird seminal vesicles and in its atrophy processes and its seasonal tissue remodeling as in hamster ovaries (Shahed *et al.*, 2015). Other authors postulated that MMPs could participate in fertilization as has been shown in mammals (Ferrer *et al.*, 2012) and *Xenopus* (Iwao *et al.*, 2014; Sato *et al.*, 2015).

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