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Effets de la castration sur l'immunoexpression de la matrilysine (MMP-7) 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-7 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, 7, 30, 50 and 90 days in spring, was submitted to the indirect immunohistochemical protocol with amplification with streptavidin-biotin-peroxidase and AEC/DAB as chromogen.

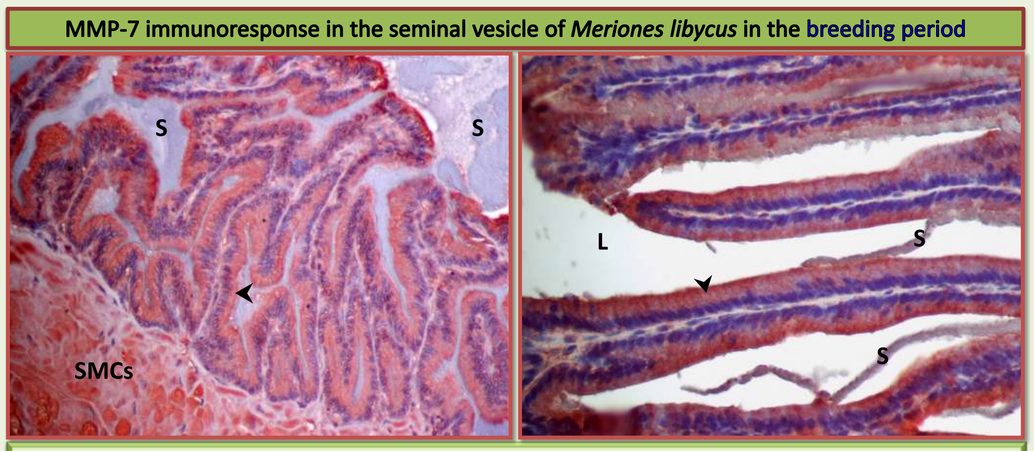
ANIMALS

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 benefies from the shade procured by the plants (Petter, 1961).

- Breeding period: spring and early summer.
- Resting phase: late summer, autumn, late winter.

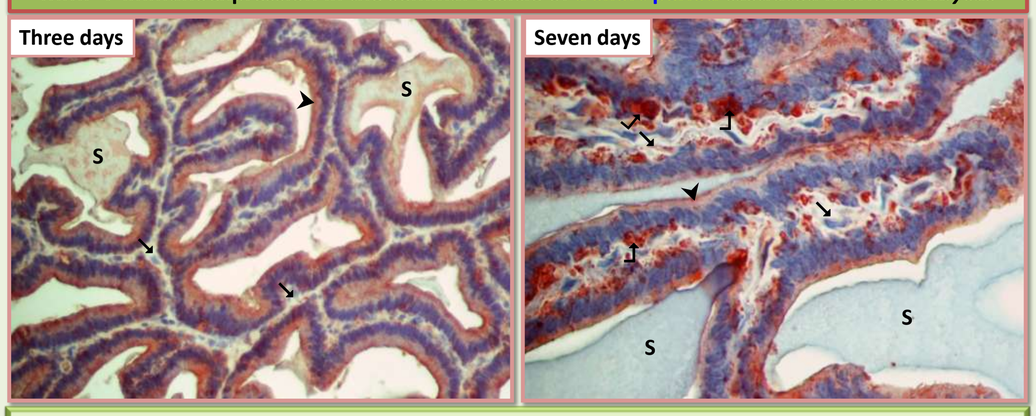
RESULTS

MMP-7 immunoresponse in the seminal vesicle of *Meriones libycus* in the breeding period



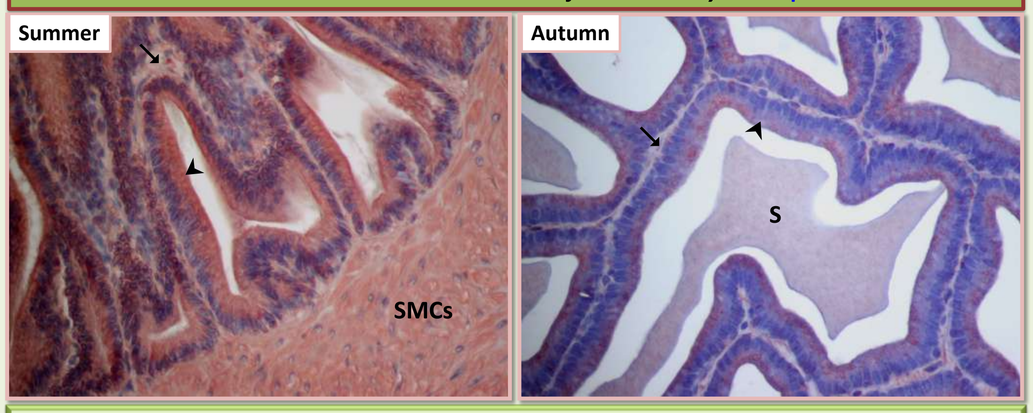
A non immunostained secretion (S) is observed in the Lumen (L) of the seminal vesicle. Luminal epithelial cells (➤) and smooth muscle cells (SMCs) show a strong immunohistochemical staining. No immunoreactivity in the extracellular matrix (↘).

MMP-7 immunoexpression in the seminal vesicle of a short period castrated *Meriones libycus*



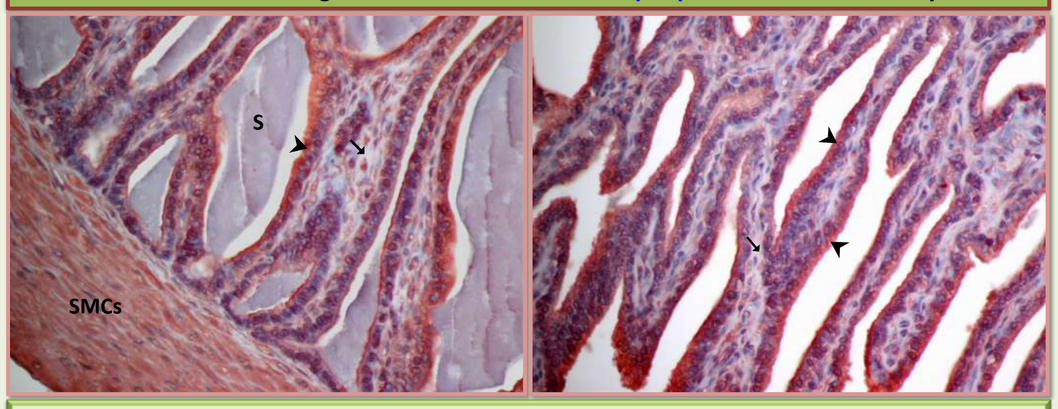
A weak positive immunohistochemical staining is seen in the luminal epithelial cells (➤). The extracellular matrix (↘) and the secretion (S) show a negative immunoreactivity. In seven days of castration a significant peri-basal (⮥) immunoresponse is observed.

MMP-7 immunodetection in the seminal vesicle *of Meriones libycus* in quiescence season



Luminal epithelial cells (➤) with an attenuated immunolabeling in autumn. The extracellular matrix (↘) and the secretion (S) are not immunostained.

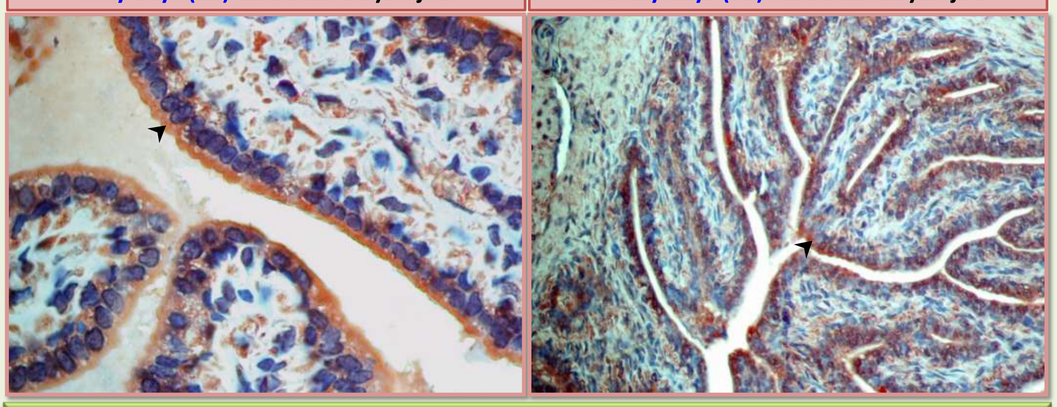
MMP-7 immunostaining in the seminal vesicle of thirty days castrated *Meriones libycus*



The pattern of the immunostaining is the same as that of the quiescence period in summer: Luminal epithelial cells (➤) and smooth muscle cells (SMCs) show an important immunoreactivity. The extracellular matrix (↘) and the secretion (S) are not immunostained.

MMP-7 immunoreaction in the seminal vesicle of a long period castrated *Meriones libycus*

Fifty days (50) castrated Libyan jird | Ninety days (90) castrated Libyan jird



The MMP-7 immunostaining is concentrated in the luminal epithelial cells (➤)

DISCUSSION AND CONCLUSION

In the breeding period, the MMP-7 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* and in seven days castrated *Meriones libycus* the immunostaining is delocalized in the peri-basal ECM suggesting a role of MMP-7 in epithelial atrophy induced by hormonal deprivation. In the quiescence season, MMP-7 immunoresponse decreases slightly in epithelial cells; SMCs also show a net immunoreaction. This pattern of the immunolabeling remains as it is after thirty days of castration. However, following a prolonged castration (50 and 90 days) the immunoreactivity diminishes strongly in the luminal epithelial cells. 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-7 and a dynamic tissue distribution. This allows us to stipulate a modulating effect of testosterone but not alone on the MMP-7 and the involvement of this enzyme in the physiology of the Libyan jird seminal vesicles, in its atrophy processes and its seasonal tissue remodeling as in hamster ovaries (Shahed *et al.,* 2015). Other authors postulated that MMPs could have a function 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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