

References

- BÍRO, D. 1995. Zásady konzervovania krmív silážovaním. In: Debreceni, O. a kol.: Praktická príručka pre chovateľa hovädzieho dobytku. Nitra: VŠP, 1995, 41-56.
- BÍRO, D. 2000. Technologické aspekty výroby kvalitných lucernových siláží. In: Slovenský chov, roč. 5, 2000, č. 4., s. 31 – 32.
- GALLO, M. 1999 a. Využitie silážnych prípravkov pri výrobe siláží. In: Slovenský chov, roč. 4, 1999, č. 6, s. 5 a 8.
- GALLO, M. 1999 b. Súčasný stav vo výrobe silážovaných krmív na Slovensku. In: Slovenský chov, roč. 4, 1999, č. 10, s. 8 – 9.
- JAMBOR, V. – CHROMEČ, P. 1997. Vliv absorbentů na fermentační proces a nutriční hodnotu vojtěškové siláže. In: Aktuální problémy šlechtění, zdraví, růstu a produkce skotu. České Budějovice: JU, 1997, s. 282 – 284.
- JAMBOR, V. 1999. The effect of chemical additives on fermentation characteristics and nutritive value of alfalfa silage. In: 9. Medzinárodné sympórium: Konzervovanie objemových krmív. Nitra: VÚŽV, 1999, s. 144 – 145.
- SOMMER, A. 2000. Výživa, technika a technológie krmienia hospodárskych zvierat. Slovenský chov, roč. 5, 2000, č. 4, s. 25.
- STN 46 7092. 1986. Metódy skúšania krmív
- SVETLANSKÁ, M.- ČEREŠŇÁKOVÁ, Z.- PETRIKOVIČ, P. – SOMMER, A. 1999. Vplyv obsahu hrubej vlákniny a jej frakcií na výživnú hodnotu siláží. In: Najnovšie poznatky pri výrobe a využití krmív, krmných zmesí, krmných doplnkov vo výžive zvierat a ich smerovanie do budúcnosti. Ivanka pri Dunaji: VÚK, 1999, s. 107 – 111.
- ŠKULTÉTY, M. – ŠKULTÉTYOVÁ, N. – BENCOVÁ, E. 1993. Výživná hodnota silážovaných krmív. In: Výživná hodnota krmív a ich vplyv na kvalitu živočišných produktov. Nitra: VŠP, 1993, s. 216 – 221.

ANATOMICAL STUDY OF MALE GENITAL APPARATUS IN ONDATRA

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Summary

Four ondatra male bodies (two in formalin and two fresh corps) were used in the experiments, which were done in April. It was established that the bottom of abdominal diverticules helped by distal side of testicular ligament, which pass by the epididim, anchors the backside of the testicles. Seminal vesicles have the top curved crania-caudal. Prostate has 3 pairs of lobes that are in symmetric disposition with urethra. Bulbous-urethral glands, blackberry-shaped, communicate with urethra within fine tube. Preputial glands, have great volume, cream coloured and give of a musk good smell.

Key words: *ondatra, male, anatomy, genital apparatus.*

Ondatra is a fur bearing species relatively recent arrived in Romanian fauna, and this is the aim for what it is a little studied. Because of the economical importance of this species, and the informations penury about its biological particularities, we consider opportune to make some anatomical study regarding ondatra's male genital apparatus.

Material and methods

Studies were made in April, using 4 ondatra male bodies, two formalined and the other two were fresh. For formalining it was injected in abdominal cavity 200 ml of formalin 10%. These animals were opened after 8 days after formalin injection data.

Results and discussion

Like the other mammals, in ondatra males, genital apparatus can be systematized in three segments: *gonads*, represented by testicles, *conducting ducts (tubular portion)* composed by epididim and vas deferens, *urinary-genital portion*, made from pelvic urethra and extra pelvic one. Around the pelvic portion of urinary-genital channel, annex glands are placed: seminal vesicles, prostate and bulbous-urethral glands. Lateral of penis portion there are two preputial glands (fig. 1, 2).

Testicle is a pare organ, with ovoid shape, situated in inguinal region without to differentiate a real scrotal burse. Right testicle have longitudinal diameter expanded between 19 and 22 mm and transverse one between 13.8 and 15 mm. Left testicle have longitudinal diameter expanded between 17.5 and 21 mm and transverse one between 11 and 15 mm.

Testicles together with the epididim are surrounded by abdominal diverticle, which largely communicate with abdominal cavity, and allow the testis migration intra- and extra-abdominal cavity. The caudal-ventral extreme of each testicle is anchored in abdominal diverticulum bottom, through distal portion of testicular mezo, which pass over epididim too.

Free margin of testicle mezo includes an adipose deposit cream colored. Testicle's diverticulum is extra-abdominal prominent by 30-31 mm length on right side and 26-28 mm on left one. Diverticulum transverse diameter is between 12 and 16 mm.

The *epididim* is 34-45 mm long, thick, not tight beside longitudinal axe of testicle. It is anchored through terminal portion of testicle mezo. The head and tail are evidently.

The epididim is continued in cranial sense by *vas deferens* and this is opened bilateral in initial portion of urethra. It is 55-62.5 mm long and 2-2.2 mm in diameter. In abdominal portion there is a relatively abundant adipose deposit, on the suspensor ligament of the *vas deferens*.

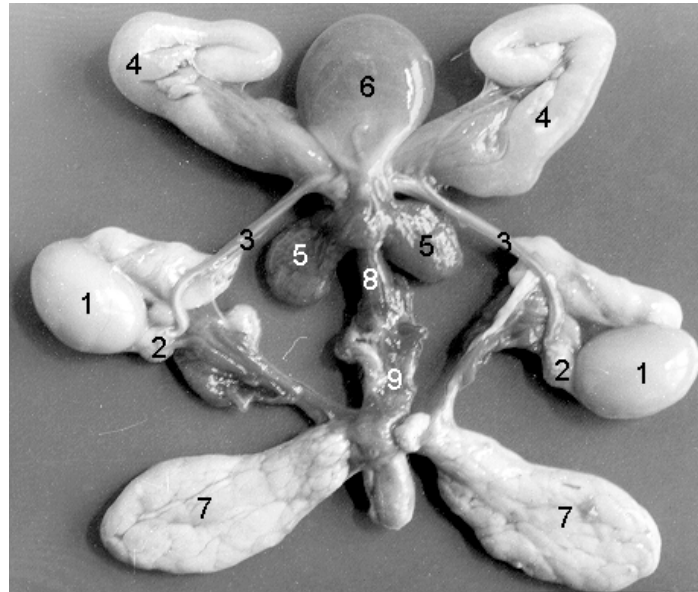


Figure 1. Male genital apparatus in ondatra. Ventral view.

1 - testicle; 2 - epididim; 3 - vas deferens; 4 - seminal vesicles; 5 - prostate; 6 - urinary vesicle; 7 - preputial glands; 8 - pelvic urethra; 9 - extra pelvic urethra.

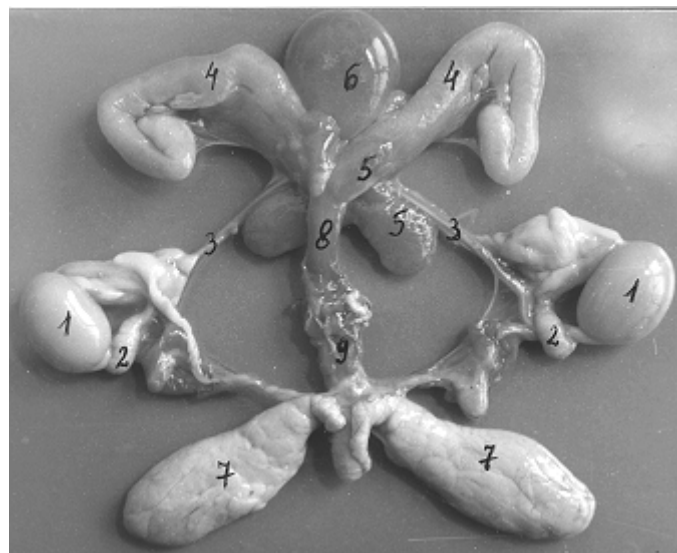


Figure 2. Male genital apparatus in ondatra. Dorsal view.

1 - testicle; 2 - epididim; 3 - vas deferens; 4 - seminal vesicles; 5 - prostate; 6 - urinary vesicle; 7 - preputial glands; 8 - pelvic urethra; 9 - extra pelvic urethra.

Urethra, urinary-genital common duct, 57-66 mm length, can be systematized in a pelvic portion (30-34 mm length) and an extra pelvic one (27-32 mm length).

Transverse diameter of pelvic urethra is 6.5 mm, and for the extra pelvic one is 7 mm.

In cranial intra pelvic portion of urethra, seminal vesicles, prostate lobes, vases deferens and urinary vesicle are opened. Between intra and extra pelvic urethra portions, at demarcation place, bulbous-urethral glands are opened.

The *penis* is formed by extra pelvic urethra that is the anatomical base, by two cavernous corps, a sponges corps, vases and nerves, and it have a caudal orientation in repose.

Because of sub-ischiocavernous muscle, in erection, the free extremity becomes cranial. In repose, the length of the penis is 27-29 mm and the diameter between 6.5 and 9 mm.

Ondatra males have two voluminous *seminal vesicles*, formed by a straight portion at the base, and a crutch-like shape proximal portion. The crutch-like shape portion is anchored on the straight one, with a mezo. Extern wall of seminal vesicles is boselated especially on concave site of "crutch". The straight portion of each gland has 62-78 mm length and between 6.5 and 9 mm in diameter. The crutch-like shape portion has 28-44 mm length and between 5 and 7 mm in diameter.

In ondatra, the *prostate* is a complex gland formed by many lobes symmetrically disposed with urethra sides; it has 2 ventral lobes, 2 dorsal lobes and 2 lateral lobes.

Ventral lobes, pear-like shape, have cranio-caudal orientation, and their length is between 25 and 28 mm. Dorsal lobes have 18-25 mm in length, covering basal portion of seminal vesicles on their dorsal side. Lateral lobes, named in the other species (rats) coagulant glands, are disposed on caudo-lateral straight portion of seminal vesicles, having a length of 40-60 mm. Probably, in ondatra the lateral lobes secretion determine (like in rats) the coagulation of seminal vesicle products and formation of vaginal stopper. It is no morphological evident prostate corps, in ondatra.

Bulbous-urethral glands, are pare organs, reddish, blackberry-like shape, symmetrical disposed at the passage way level between intra and extra pelvic urethra. At this last mentioned level, bulbous-urethral glands is opened through a fine duct, having 10-11 mm in length. Each lobe has between 8.5-11 mm in length and 5-7.1 mm in diameter. These glands are placed lateral by rectum, surrounded by a conjunctive tissue, between ischio-cavernous and bulbous-cavernous muscles.

Preputial glands have cream color and there are opened in preputial place, having a musk good smell. There are between 38 and 67 mm in length and their transverse diameter is between 8.8-9 mm and 15-17.5 mm at base and medio-cranial portions, respectively.

References

Bura M. (1988) - PhD Thesis; I.A. Timisoara.

Pastea E., Muresianu E., Constantinescu GH., Cotofan V. (1978) - Anatomia comparativă si topografică a animalelor domestice; Ed. Did. si Pedag., Bucuresti.

Ormieres Ph.J. (1982) - Etude morphologique des glandes annexes de l'appareil genital male des animaux de laboratoire; Ecole National Veterinaire de Toulouse.

PROTECTION OF GASTROINTESTINAL TRACT OF SUCKLING PIGLETS AND WEANED PIGS AGAINST THE INVASION OF BASIC ENTEROPATHOGENS BY PROBIOTIC PREPARATION IMUGUARD P A.U.V.

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Summary

There was performed a study with three groups of pigs (323, 324 and 312 animals in the each group) from the delivery till the age of 56 days in the pig fattening farm DONA Ltd. (Veľké Revišťa, Slovak Republic). Initially, there were used probiotic preparations on the basis of the lactic acid producing bacterium *Enterococcus faecium* M-74 containing $2 \times 10^9 \cdot g^{-1}$ germs in the form of paste (Medipharm CZ Ltd., Czech Republic): a) control group – Lactiferm paste Fe (vitamins A, D3, E and Fe^{2+} ions added), b) 1st experimental group – Lactiferm paste (vitamins A, D3, E added), c) 2nd experimental group – Imuguard P-paste (vitamins A, D3, E and IgY antibodies against pig rotavirus and *Escherichia coli* K88, K99, 987-P, F-18 added). The pastes were applied three times on the 1st, 3rd and 5th day after the delivery of pigs. There were added the following feed premixes containing the germs of *Enterococcus faecium* M-74 into the starter feed mixture COS-6118-Anprovimi for a) the 1st experimental group Lactiferm premix L-5 ($5 \times 10^9 \cdot g^{-1}$ germs), b) the 2nd experimental group Imuguard P-premix ($0.6 \cdot 10^9 \cdot g^{-1}$ germs and 920 mg pasteurized dried activated egg matter containing the same IgY antibodies as Imuguard P-paste). There were measured weight of animals immediately after the birth, on the day of weaning at the age of 28 days and at the age of 8 week. There was observed the health state of pigs and the incidence of gastrointestinal infections.

In the 2nd experimental group (preparation Imuguard P a.u.v. was applied) was lower the total number of diarrhoeic animals in one litter from 1st till 28th day of age by 20.07%, total number of injection application of antibiotic preparations by 48% from the time of delivery till the weaning, mortality of the suckling piglets by 15%. There was observed the lowest number of the diarrhoeic animals in one stall of the 2nd experimental group by 98.48% ($P < 0.05$) and the lowest mortality of the weaned pigs by 33.62% in the period from 28th till 56th day of age.