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Characteristics Morphology Female Reproductive System Pegagan Ducks

Meisji Liana Sari, R. R. Noor, Peni S. Hardjosworo, and Chairun Nisa

Abstract—Pegagan duck as native south sumatera duck were one of specific genetic resource that needs to be preserved and explored. Scientific information on Pegagan as animal genetic resources is less than other native ducks. This study was done in order to observation of the female reproductive organs. Observation of the female reproductive organs used a sample of each generation (G0, and G1) as 6 tails. Samples were taken after a female duck egg production decreased by 50% with the criteria of egg production is high, medium and low, respectively 2 tails, drake samples were taken during the last IB conducted respectively by 4 tails. Then for each block of 5 tissue using rotation microtome and placed on top of a glass of in-free objects. After the glass object existing network incision is stored in an incubator at a temperature of 37o C for 1 night. The next process is staining (staining) with haematoxylin-eosin and tissue closure with cover glass (mounting). There productive tract between elders G0 and F1 offspring are generally the same. The overall length of the reproductive tract is similar to duck Pegagan Tsaiya and Khaki Campbell ducks.

Index Terms—Morfology, reproduction female, Pegagan ducks.

I. Introduction

Duck is a local poultry widely spread in Indonesia, especially in the plains of the waters. Duck has been since the beginning of 1900 and is currently utilized as a farm family business [1]. Ducks in Indonesia get seseai name with the name of the place where the cattle were bred for generations or domesticated as Tegal duck, duck Mojosari, duck Cirebon. In South Sumatra (Ogan Ilir regency) are ducks that are named with the name of the river where the river Pegagan ducks are bred. Pegagan ducks maintained by farmers in small groups as a producer of eggs. Pegagan domestication through many generations duck breed around the river that has heat and high humidity. Adaptability to hot temperatures and high humidity is superior properties that need to be preserved because of the climate in Indonesia is mostly hot and humid. Potential duck in Indonesia is very large, especially as a producer of meat and eggs. Indonesia is known as one of the countries that has a very rich biodiversity. One such property is the diversity of farm animals, including ducks. Duck populations in Indonesia are mostly found in the Indonesian islands of Java and the West. Indonesia has many local species such as ducks Cirebon duck, duck Mojosari, Alabio duck, duck duck Tegal and Magelang. The government's efforts in supporting the program livestock sub-sector is increasing livestock production can be achieved in two ways: by increasing livestock population and increase the genetic quality of livestock. In order to preserve the local cattle have been carried out diverse businesses such as artificial insemination and crosses

Pegagan ducks come from Kotodaro village, Tanjung Raja district, Ogan Ilir regency (OI), South Sumatra Province. Population over time relative decline, so now the duck population is only about 10% of the duck population in South Sumatra. Though duck Pegagan as a source of germplasm has not been revealed as another local duck. Pegagan ducks potential advantages compared with other local ducks. The advantage is weight average adult ducks that can achieve > 2 kg, and the average egg weight > 70 g [2], [3].

Pegagan ducks development needs to be done through a breeding program with respect to its characteristics. Breeding programs can significantly help in producing certain kinds of ducks with the properties and the expected production goals. The purpose of this research is to study and identify Observation of the female reproductive organs Pegagan ducks and can be used as a guideline in the cultivation efforts.

II. Materials and Methods

Observation of the female reproductive organs used a sample of each generation (G0, and F1) as 6 tails. Samples were taken after a female duck egg production decreased by 50% with the criteria of egg production is high, medium and low, respectively 2 tails, drake samples were taken during the last IB conducted respectively by 4 tails. High intensity is laying ducks that lay eggs every week until the end of the study with a weekly production capacity by 70-100%, for moderate intensity group spawn every week with weekly production capacity by 40-70%, while the lower is the intensity of the ducks do not lay eggs every weeks and production capabilities <40%.

Ducks slaughtered for bloodletting. As soon as the blood is no longer out, ducks surgical fixation. Performed an incision on the mid-ventral abdominal area ranging from the cloaca to the sternum, followed by cutting to the bone and bone costae chest muscles can be released. Reproductive organs were observed in situ to see viscerum site. Subsequently all reproductive organs are removed from the abdominal area to be observed both macroscopically and microscopically.

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Macroscopic observation of the female reproductive organs Macroscopic observation of the female reproductive organs The form, weights and sizes from all parts of the reproductive organs ranging from the ovary, infundibulum, magnum, isthmus, uterus and vagina.

Making preparations reproductive tract histology performed by modification of the method Kiernan [4] is dehydrated by immersing the material in a solution with a concentration of alcohol-rise (70%, 80%, 90%, and 100%), purification (clearing) in xylol concentration (70 %, 80%, 905, and 100%), infiltration (parafinisasi) with paraffin tissue samples until planting (embedding) for the manufacture of tissue blocks. Then m thickμperformed the incision (sectioning) for each block of 5 tissue using rotation microtome and placed on top of a glass of fat-free objects. After the glass object existing network incision is stored in an incubator at a temperature of 37o C for 1 night. The next process is staining (staining) with haematoxylin-eosin and tissue closure with cover glass (mounting).

III. Results and Discussion

Female duck reproductive system consists of the infundibulum, .magnum, isthmus, uterus (shell gland) and vagina. Each parth as different functions and sizes in the process of producing eggs. Morphological description of the female reproductive organs of ducks Pegagan elders (G0)) and (F1) offsprings can be seen in Fig. 1 and Table I.

Fig. 1. Morphology of the reproductive tract in the female ducks Pegagan elders G0 (A) and offsprings F1 (B).Number of mature yellow follicles (KM) on derivative F1 more than the elders G0. The reproductive tract between elders G0 and F1 derivatives are generally the same. 1. Ovary. 2. Infundibulum. 3. Magnum. 4. Itshmus. 5. containing egg shell gland. 6. Vagina. 7. Cloaca. Bar = 1.5 μm.

Results of macroscopic observation of the ovaries showed ducks Pegagan follicle development can be observed from the changes in shape and size. Follicle development begins from small white follicles (PK) with a diameter of <1 mm, large white (PB) 2-4 mm diameter, small yellow (KK) diameter 5-10 mm to mature yellow follicles (KM) wh has diameter of >10 mm (etches 1996). Number of follic at each stage of development suggests ovarian activity productivity of ducks (see Table I).

TABLE I: Number of Ovarian Follicles at Stages of Develop

Origin	Productioni	PK	PB	KK	KM	Total
G0	Highti	69.5	38.5	21	7.5	136.5
	Mediun	19	39	3	7	68
	Lowh	73	32.5	12.5	5	123
	Total	161.5	110	36.5	19.5	327.5
F1	Highti	44	23	9.5	7	83.5
	Medium	97	38	9.5	5.5	150
	Low	48	22	7	5	82
	Total	189	83	26	17.5	315.5

Note: 1) The calculation is done after fixation in 4% paraformaldehid 2 = white small (<1 mm). NT = white large (2-4 mm). KK = yellow sma 10 mm) KM = yellow mature (> 10 mm).

From Table I, it can be see that the total numbe ovarian follicles between G0 and F1 are relative the sa However, if viewed from a total of follicles b production group shigh, medium and low, the elders of group G0 total production being lower than the production group and the total number of follicles derivative group of high production is lower than in production medium. It turns out the total number of follic affected by the total number of follicles PK. The s number of follicles PK partly due to the small size of follicles that PK was not observed with the naked eye, or follicles PK loose or fall off during the fixation process experiencing gregression in the developmental process

On histological observation can be observed that ovarian cortex consists of ducks and medulla. Develop of ovarian follicles can be observed to occur in the co that are shown in the ovarian follicles of various sizes, f primordial follicles, the follicles start to the follicles subsequent development, called follicle development. M specifically, the histological observations of follic development can be seen apart from the size of the diam also the layer of cells that make up the wall of the follicle the early follicular small oocyt looked round with a co the middle. In the early follicular epithelium composed b thin wall cube inline. In the development of the fol diameter began to swell, and theca externayork form be to appear (see Fig. 2).

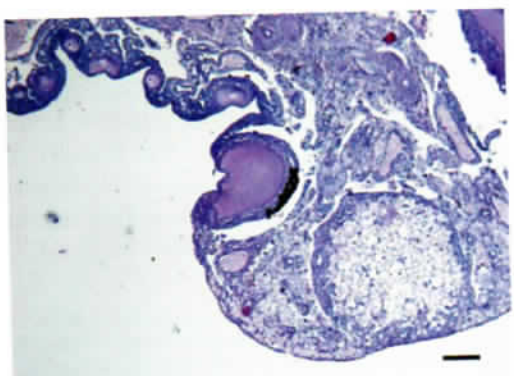

Fig. 2. Shows the histology of ovarian follicle development Pegagan d (1) York-laden (2) Regressed follicle after ovulation is characterized b presence of vacuoles cells (3) = HE staining. Bar 10 μlm.

Oviductin Pegagan ducks has a length of about 54cm. The length of each part of the oviduct can be seen in Table II.

TABEL II: THE LENGTH OF EACH PART OF THE OVIDUCT PEGAGAN DUCK

Length (cm)	Pegagan duck		Tsaiya	Khaki campbel	Chicken
	G0	F1			
Infundibulum	5 ± 1.57	5±0	4.8±1.4	6.9±1.2	9
Magnum	21.35 ±7.07	27±3.63	24.4±3.1	24.3±2.9	32
Isthmus	11.5±5.46	8.83±1.13	10.6±2.3	7.9±1	14
Shell gland	9.43±4.94	7.33±1.97	7.3±1	5.9±1	21
Vagina	4.97±1.18	6.75±0.76	*	*	*

Table II shows the overall length of the reproductive tractis similar to duck Pegagan, Tsaiya and Khaki Campbel ducks, but shorter than the chicken. Especially in the shell gland. However, when seen from the length of time taken in the formation of egg longer duck. Especially in the channel egg shell in ducks lasted for 18.19 hours with a shorter channel length. When compared to chickens that lasted for 19.78 hours with a longer channel. This resulted in the egg shellis thicker than chicken eggs hell [5].

Infundibulum is funnel-shaped section located on any part of the posterior ovary. Infundibulum to capture the ovum by the ovary and as the site of fertilization. Infundibulum then pass channel with peristaltic into the magnum. Fig. 3 shows the visible presence of mucosal folds fold consisting of primary, secondary fold. In contrast to the folds of the mucosa in chickens fold consisting of primary, secondary and tertiary fold fold, folds mucosa in ducks just fold consisting of primary, secondary fold. Mucosal surfaces lined by pseudostratified epithelium with cilia. Infundibulum mucous thinner than the magnum mucosa.

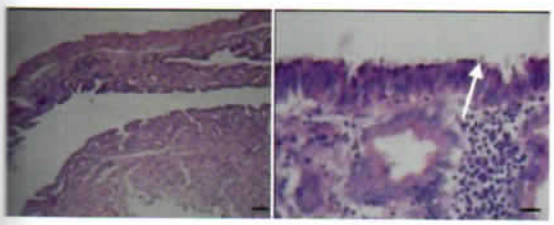

Fig. 3. Structure of histology infundibulum Pegagan duck with mucosal structures that form folds (A), as well as the pseudostratified epithelium with cilia (B). Cilia (↗). = HE staining, bar = 10 lm A, B = 1 µm.

In the magnum looks the folds of the mucosa. On the surface of the mucosa lined by pseudostratified epithelium consisting of columnar ciliated cells and secretory (goblet) cells. The folds of the mucosa in the magnum is longer when compared to the folds of the mucosa in the infundibulum. In the magnum also seen the cilia that serve to assist the movement of sperm. There are differences in the form of secretory cells in ducks that produce high, medium and low. In the high-producing ducks secretory cells are more active than the ducks that produce medium and low. It is thought the higher egg production will be more active secretory cells (Fig. 4). Magnum secrete four egg whites are (1) kalaza, (2) egg whites in a thin section, (3) the center of the thick egg white, and (4) a thin outer egg whites.

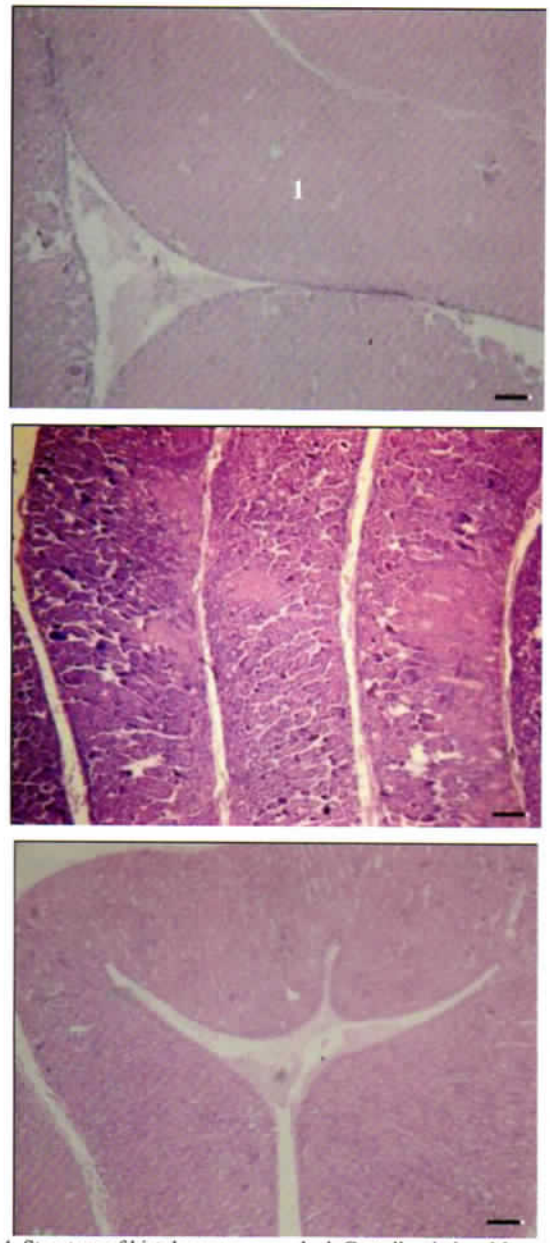

Fig. 4. Structure of histology magnum duck Centellaasiatica. Magnum cells at high production duck looks most active glands (A), the production is being partially active glands and partly resting phase (B) and the low production of only a few nodes are active low (C). Active glands (1), gland resting phase (2). = HE staining. Bar 10 µm.

From Fig. 5 mucosa visible presence on the isthmus pseudosrratified the ciliated columnar with secretory cells (Fig. 5A). Primary fold on the isthmus width is not like the magnum. Goblet cells secrete a number of active fibers and keratin protein to form the egg membrane lining the inside and outside. The walls of eggshell gland seen the primary fold, fold and secondary pseudostratified epithelium. Fold the shell gland width not like the magnum and fewer glandular tissue (Fig. 5B). This channel is formed of polygonal-shaped gland cells. In this section eggshell shaped, cuticles and skin coloring eggs. In addition, this section of the ovum also had full rotation causes the formation kalaza ferus beginning of the infundibulum.

Fold mucosa in the vagina are long and slender. In primary fold a secondary there are many fold. Cell wall covered by cilia, pseudosrratified columnar epithelium. In the vagina there is also a temporary sperm storage gland (Fig. 5C).

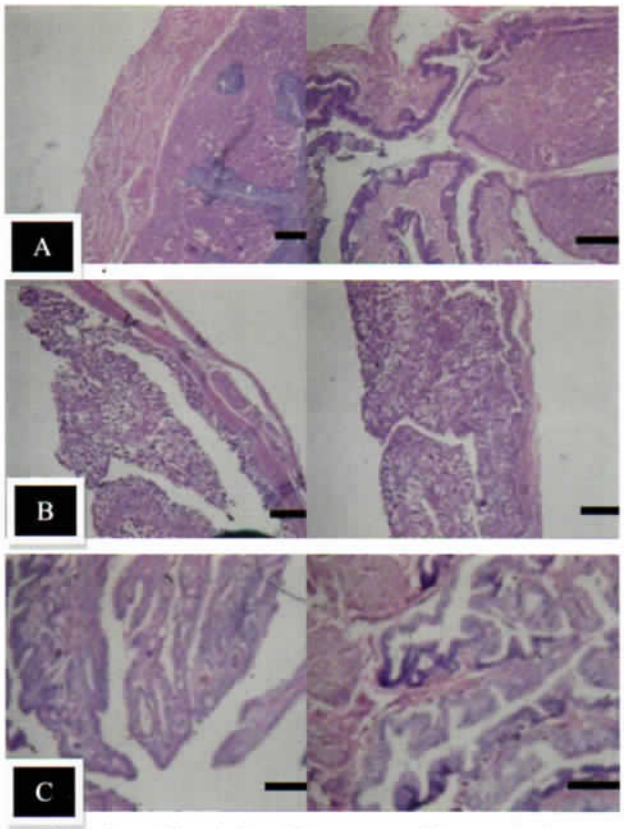

Fig. 5. General description of the structure of the reproductive tract histology Pegagan ducks (A) isthmus. (B) shell gland. (C) vagina. Bar 15μm.

IV. Conclusion

There productive tract between elders G0 and F1 offspringn are generally the same. The overall length of the reproductive tractis similar to duck Pegagan, Tsaiya and Khaki Campbell ducks.

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