

Study of Histological Structure of Ovary *Garra tibanica* tissue Fresh Water Fish (Gunther, 1874)

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Consists wall Ovary in Fish *Garra tibanica* of three layers, external where a peritoneal epithelium and Central a tunica albuginea which consists of vascular connective tissue. The interior is a germinal epithelium a layer responsible for the formation ovigerous lamellae and there are Oogonia near epithelial germ, as well as along the plate and pass mothers ovarian eggs many of the formative stages that eventually lead to the formation of mature oocytes and their surrounding vesicles.

Key word: Histology, Ovary, fishes, fresh water .

Has been studied a lot of fresh water fish in parts of the Kingdom of Saudi Arabia by several researchers as they studied Banister and Clark (1975) the species of these fish and the result of this study identified seven types belong to two platoons Cyeciliidae, Cyprinidae. As the studies conducted on freshwater fish in the Kingdom of Saudi Arabia have been confined to the taxonomic studies and the scarcity of anatomical and histological you look up and study in the field of these anatomical and histological studies of some of these fish. It was catching these fish and to identify the kind classify using studies taxonomic freshwater fish Arabian Peninsula was identified *Garra tibanica* which belong to the family Cyprinidae studies are anatomical carried out by

folder Mujallid (1989) on one of the freshwater fish in the Western Region of Saudi Arabia Barbuarabicus studies in this area which included a full season for the gonads.

Objectives

The objective is study the a Gonad of *Garra tibanica* fish in a single season has been stating this study working in the field of fisheries if this fish examined in four seasons to give a comprehensive idea about though is found in other areas where different rainy season or be in fresh water lakes.

MATERIALS AND METHODS

Samples were collected from a *Garra tibanica* fish used in this study (Figure 1) of fresh water pools in the valley of Rabigh governorate in summer 2014. It was the sampling by insect nets, and to keep these samples lived, while return them to the laboratories Department of Biology, Faculty of Science, King Abdulaziz University.

The anatomy very carefully to examine

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Fig. 1. Image shows fish *Garra tibanicus*

the gonads and identify the testes and ovaries and remove all of them very carefully and wash quickly in brine concentration (0.7%) and then divides each of them into small pieces allowing the installed user Bouin's Solution be interspersed within the tissue well and kept the samples for 24 hours. After the installation process fixation transferred samples to alcohol 70% and leave for 24 hours with change during this period several times and then followed by the completion of the process of dehydration pass parts of the gonads in concentrations upward of alcohol (80%, 90%, 95%, 100%) For a period of at least two hours with the change more than once then carried out on the samples clearing process first using a mixture of equal proportion of alcohol 100 and Xylol left in this mixture for 15 minutes and then transported then Xylol for 20 minutes. It was then embedding samples and then cut using the microtome to the thickness of consecutive sectors between 6-8 microns. Staining process using haematoxylin and eosin. After making staining taken away from her water using upward concentrations of alcohol followed a clearing using Alcohol 100%, Xylol and equal proportions and then transported in end to pure embedded sectors after clearing permanently using Canada Balsam Conditioner then cover slides lids clean slides. The microscopic images were the work of colorful optical microscopy for selected sectors in every part of the gonads.

RESULTS

The Histological Structure of the Ovary

Shows the ovary in Transverse Sections oval or rounded according to the degree of maturity, and shows ovarian closed wall good configuration to some extent in the pre- stage mating where it appears in the recent period thin too as a result of ovarian enlargement in the phenomenon of fullness

eggs (Fig. 2).

And stabilizes the eggs developing ova in ovarian stroma. It is a connective tissue and Vascular Connective Tissue supported by white fibers or colloidal White or Collagenous Fibers and Ovarian smooth muscle Smooth Muscle Fibers and appear vain ovary in the form of rather good as before maturity either in the ovaries mature, they are almost disappear as a result of the accumulation of ovarian eggs full configuration or on the verge of going out (Fig. 3).

It showed a microscopic examination of

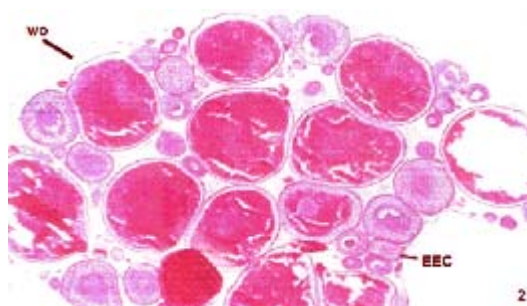


Fig. 2. Cross-section image of a mature ovary passes in fish *Garra tibanicus* the ovary wall shows the wall as well as small egg cells ($\times 220$) WO: the wall of the ovary, EEC: early egg cells

Serial Sections of the ovary in two cases before maturity to and during or Oogonia stages training Developmental Stages different eventually lead to the formation of mature follicles and the adoption of these stages on the basis of changes in size, which occur in both the nucleus and Ooplasm and Egg Membranes and therefore it was possible to divide these stages into six stages as follows (fig. 7,6,5,4,3,2).

Phase I: Oogonia

There Oogonia In gatherings or Nests down the wall of the ovary or are scattered in vain ovarian subsidized for Ovarian Lamellae and has a diameter or eggs Oogonium about 14 microns on average and is characterized by a nucleus base are large and round with the nucleolus centralized clear and dark pigmentation, as well as a limited number of granules chromatin precision adjacent to the wall of the nucleus, and the nucleus is surrounded limited amount of cytoplasm and basal homogeneous dye (Fig. 2).

Phase II: The Early Oocytes

The average diameter Oocytes small about 28 microns, while the average diameter core radius around the cell itself, and the central nucleus containing basal dye on four nuclei, the average spread in nucleoplasm For the cytoplasm it homogeneous basal pigmentation (Figure: 2,3).

Phase III: The Late Oocytes

Increase the amount of cytoplasm noticeable increase for the size of the nucleus, while the size of these cells varies in diameter amounts to between 65 158 microns, but for the nucleus gradually turning to pink, that is, they become acidophilic so when you dye sectors bleached double haematoxylin - eosin, and the nucleus contains on average 22 nucleolus of them 2 or 3 in the development of a centralized, while organized nuclei remaining adjacent almost the Nuclear Membrane, has expelled some of these nuclei to the outside where the plasma concubine ovale . (Fig. 2).

Notes on the plasma concubine ovale late small, they still Homogenous and show a strong tendency for pigmentation by hematoxlin, while appearing plasma cells large has lost homogeneity to some extent as it has become less alkaline addition can be seen Yolk Nucleus in the form of aura of plasma light pigmentation somewhat stable around the perimeter of the nucleus in cells ovale small, and this aura is gradually moving away from the core toward the edge of the cell, and the larger the cell whenever approached this aura to the disappearance.

Small cells ovale late surrounded by Simple Squamous Follicular Epithelium But large cells, they are surrounded by a thin layer of Connective Tissue punctuated by a limited number of epithelial cells derived from epithelial ovarian sheets set for the start of a vesicle formation (Figure 5.4).

Phase IV:: The Early Vacuolization of Cytoplasm

The average diameter of small vesicles that appear out vacuoles about 65 microns. And includes the nucleus in such vesicles about 32 minutes in the nucleolus Nucleoplasm transparent acidophilic while still Nuclear Membrane basal pigmentation such as the Ooplasm which features as containing many saccules or gaps transparent and take situation barefoot (Figure 7).It consists of the Follicular Epithelium of a single layer of cells with nuclei splayed dark and cover the epithelial

layer of the thin fibrous and is connected to a representative of the Theca Folliculi membrane that covers the turn acidophilic which is the basis for the formation of what is known as Zona Radiate.

Phase V: The late Vacuolization of Cytoplasm

This phase is characterized by a clear increase in the size of the cells ovale as a result of local deposition within the cytoplasm, the average size of vesicles about 320 microns and seems cytoplasm semi filled with Yolk Globules and Yolk Vesicles with the exception of a narrow aura of pale cytoplasm basal Basophilic to some extent, followed by a thick layer somewhat of Yolk Vesicles or Lipoidal Yolk Vesicles mingle with pellets vitellina spherical in shape and of varying size as they are imbued strongly by iosin, was not accompanied by a clear increase in the size of the vesicles significant increase in the size of the nucleus of which is little room inside the cell also take a central position in many of these cells, And for the Follicular Epithelium still not made up of cells interspersed with a few splayed Cuboidal Cells small, this is noted that both Theca Folliculi and the region radiatum primitive Iatrehma not a lot of change than ever before.

Phase VI: The Mature Follicles

The average diameter 460 microns mature follicles while the core average 80 micron, and acid staining nucleus contains about 15 nucleolus settled mostly at its center, it has been observed that the membrane Nuclear wavy has looked upon the manifestations of decomposition in many cases, where disappeared completely in others (forms: 7,6,5,4) In the recent cases have lost the nucleus shape round and mixed with a large portion of the components of the plasma in and around the yolk granules, and in this cases observed they are usually found at the poles of a cell known as Animal Pole.

For Vesicles yolk fatty no longer in the picture earlier if shrunk to a large extent and that was a result of the fragmentation of yolk balls that have already been observed in the previous phase and converted to fine particles irregularly, in addition to the deposition of granules vitellina new, and look compositions previous dyed cast light by iosin as for the cytoplasm may be removed to the outside, where limited and quality in the area of peripheral extremely thin and adjacent to the plasma membrane of the cell ovale mature and

seems to basal pigmentation.

Surrounded Mature Oocytes structures different that start from the inside to the outside of Plasma Membrane, envelope membrane double extremely thin and manuscript called this membrane with different names such as Zona Pellucida or Zona Radiate or Chorion is followed by a layer of non-connected cells of small round called Granuoblasta followed Theca and encapsulates all of these compositions are Basement Membrane (figures: 7,6).

It is noted that the cells ovale limit among them, especially in the outer regions, some of the Oogonia and The Early Oocytes and The late Oocytes, as well as some small cells in the early stages of the formation of gaps, and these cells are considered an asset to the formation of large eggs

in the mating season the following:

And you need this study to four seasonal

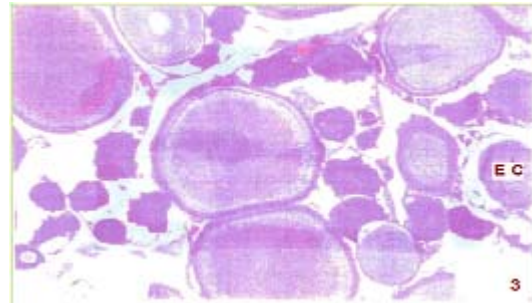


Fig. 3. Picture of the amplifier portion of a cross section describes the fish passes ovary cells ovale ($\times 450$), EC: egg cells

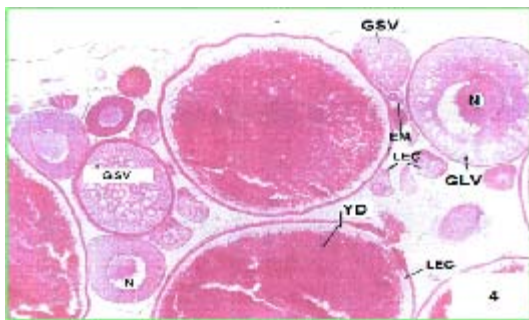


Fig. 4. Enlarge portion of the cross section in fish ovary shows the presence of mothers Eggs Garratibana and egg cells early, at different stages of the process of deposition yolk along with vesicles mature and semi-mature ($\times 520$) EM: Eggs Mothers, SEC: Small Egg Cells, LEC: Late Egg Cells, GLV: Gap Large Vesicles, GSV: Gap Small Vesicles, YD: Yolk Deposits Gap

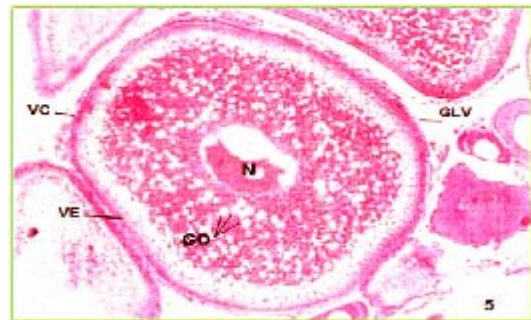


Fig. 5. Enlarge portion of the cross section in the mature ovary illustrates one of the vesicles to their yolk deposition process, note the central nucleus and also vitelline epithelial ($\times 520$) N: Nucleus, GLV: Gap Large Vesicles, VC: Vesicular Casing, VE: Vitelline epithelial, GD: Granular Deposits



Fig. 6. Enlarge portion of a cross section in the fish ovary illustrates the mature oocytes ($\times 520$) N: Nucleus, VC: Vesicular Casing, n: nuclei

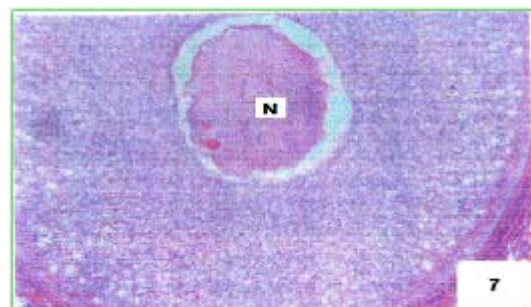


Fig. 7. Enlarge portion of the previous section shows the installation of the mature egg ($\times 520$), n: Nucleus

to be studied sufficiently thoroughly illustrated including the mating season in the case of the continued presence of these fish in the areas of water, there are fish seasonality remains a certain period and then dry water are forced to lay eggs in the mud to another season go down the rain and then die mothers and fathers and hatch eggs in the mud in the rainy season and takes the same session.

DISCUSSION

Consists wall Ovary in Fish *Garra tibanica* of three layers, external where a peritoneal epithelium and Central a tunica albuginea which consists of vascular connective tissue. The interior is a germinal epithelium a layer responsible for the formation ovigerous lamellae and there are Oogonia near epithelial germ, as well as along the plate and pass mothers ovarian eggs many of the formative stages that eventually lead to the formation of mature Oocytes and their surrounding vesicles. This is supported by those studies that have been conducted on the ovaries in many bony fish by many researchers, such as: Latif and Saady (1973); Whitman (1967); Al-Hussaini and Rizkalla (1958); Shubair (1985); Rashwan (1991); Al-Jahdali (1996) Abu-Zinadah (1990) and Shaikh (1999). In contrast there have been prior to that other opinions about the source of Oogonia in the bony fish, including what was said Yamamoto (1956) that the Follicular Cells of the empty vesicles that it came from the eggs after maturity is the primary source for new generations of Oogonia either Belsare (1962) opines that the new generation of Oogonia arise mainly from the balance of a former in the case of cumin, and this is partly agrees with what we have explained in the case of the fish under study With precisely what the Shaikh.

Has been shown that the cells ovale various stages all cellular elements of the ovary to slight variations in the extent of diversity and maturity, as the mature ovaries in tilapia is characterized by a thickness of the wall to some extent Shaikh (1999) on the opposite wall in bony fish by Abu Huili Al-Jahdali (1996) *Cephalopholis oligosticta*, while combine ovaries are all in the medulla be more mature than the cortex where they are concentrating the cells ovale large

increase in size as a result of increasing the amount of cytoplasm overfilling granules yolk-sac, in addition to a large number of yolk pellets and saccules fatty and saccules hinted greasy.

We have raised the origin and role of Nucleoli when mixed, including around the nucleus from the cytoplasm as a result of the decomposition of Nuclear Membrane in the late stages of the formation of eggs a lot of controversy indicates where Chaudhry (1951) to the fragmentation of the nucleolus since the early stages of the formation of eggs and several nuclei. The Bara (1960) did not note the process of fragmentation that occurs in the nucleolus in fish eggs *Scinberscomber* attributed to the emergence of bare nuclei fusion molecules minutes of nucleoplasm. As for appearing nuclei outside the boundaries of the nucleus has been observed by many researchers, such as: Narain (1951); Bara (1960); Malhotra (1963); Yoakim (1971, 1973); Latif and Saady (1973). Then Shubair (1988), but they differed in the interpretation of this phenomenon Ferry Mathotra (1963) and Yoakin (1975) that the scope of the oocytes emerging growth nucleus may have a role in the process of deposition hinted As Chaudhry (1951) do not agree to this role entirely while see Bara (1960) that these nuclei can and should play an active role in what happens in the cell of the metabolic processes in fish *Garra tibanica* under study have been observed phenomenon out some nuclei to the outside of the nucleus, especially in the later stages in the formation of eggs and when exposed membrane-degradable, and mingled with around of plasma of the egg. It was also noted that these nuclei are less in size and number the more advanced the egg towards the final stages of configuration, which makes us believe that it has entered into a process of deposition hinted or may have a role in what happens egg then in the activities of metabolic or they may play two roles together or may be due to the integration of many stages configuration in fear of the water evaporates and the short life of this seasonal fish. In fact, this matter needs to be more research and study. And the transfer of these fish ponds to continue to check for longer than most of these observations and conduct numerous studies about the possibility of doing the cultivation of these species.

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