

KHz

Garra rufa

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/ / 23

Abstract

The present study carried out to investigate the injuries caused by 50KHz radiofrequency at 1200 V on the histological components of the eye of *Garra rufa* fish. The exposure to the radiofrequency completed at tow different temperature degree 20 ± 1 °C, 24 ± 1 °C subsequently, for tow weeks and one month three hours daily. The results showed that the radiofrequency caused injuries on the structure of the eye. The injuries appeared at 20 ± 1 °C less than injuries at 24 ± 1 °C. On the other hand the injuries more severe at one month than at two weeks.

The injuries that appeared at 20 ± 1 °C for two weeks includes: Necrosis and damage of corneal epithelium and stroma, as well as, necrosis and atrophy of annular ligament. The injuries of iris appeared as coagulation of some blood vessels and destruction of others, as well as, bleeding occurred and degeneration of pigment and ciliary cells. In the lens necrosis and anterior cortical cataract appeared. The injuries of the choroid and retina varied at central and peripheral regions of the eye globe. In the central choroid region bleeding and hyperplasia in tapetum lucidum appeared, as well as, destruction of blood vessels occurred. In the central retina the Bruch's membrane destroyed and the pigment epithelium necrositized with odema. The rods necrositized and compacted as groups. On the other, hand the numbers of cones reduced and its myoids pyknoted. The nuclear of outer nuclear layer also pyknoted and odema, necrosis and swelling of inner nuclear layer occurred.

After one month of exposure at 20 ± 1 °C the injuries more severe in all eye components, as well as, injuries variation appeared at central and peripheral parts of eye globe. The injuries appeared at 24 ± 1 °C were more wide than at 20 ± 1 °C. After two weeks necrosis and pyknosis appeared in the corneal epithelium and stroma as well as pyknosis of Bowman's membrane, atrophy and pyknosis of annular ligament also appeared. The iris components reduced and coagulation, necrosis and hyperplasia also appeared.

In the lens, destruction and anterior cataract occurred. The injuries occurred in the all components of choroids and retina. The exposure for one month caused wide injuries in the corneal, iris, lens, choroid and retinal components. These injuries include damage of most corneal components and atrophy of iris and complete cataract of the lens. Variations in the injuries appeared at the central and peripheral region of the choroids. These injuries was wide damage of choroidal components. On the other hand, the retinal pigment epithelium completely damaged. The rods mostly damaged and the cones compacted, pyknosis and appeared very thin. The outer nuclear layer damaged and reduced. The other layers: Outer plexiform, ganglion cells, nerve fibers and optic nerve pyknosis and odema appeared in the optic nerve. Some of the blood vessels in the choroids showed neovascularization and some destroyed. The peripheral retina showed destruction of pigment epithelium and the most of the rods damaged and the cones reduced in number with damaged of many of them. The outer nuclear layer pyknosis and its rows reduced.

KHz

Garra rufa

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300 GHz

3 Hz

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.(8,7)

.(9) DNA

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(3) Rayan et al.

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300 GHz

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300 GHz

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() Elder

245 MHz

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60 KHz

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80 KHz

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:Doctor fish () *Garra rufa*-

50×30×30

Aquaria

Aerators

° 24 ± 1

Thermostat



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KHz

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Petri dish

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Wild

heebrugy AM7A

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. Postmortem changes

() Yacob

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(%) Gluteraldehyde

(%) , Phosphate buffer

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.Epon-812

LKB

Semi-thin sections

.2088 Ultratome

(-)

D.P.X

(%)

(%)

Konika

.100VX

50 KHz

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° 24 ± 1

Al-

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14 MHz

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° 24 ± 1

Thermostat

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Cooling unit

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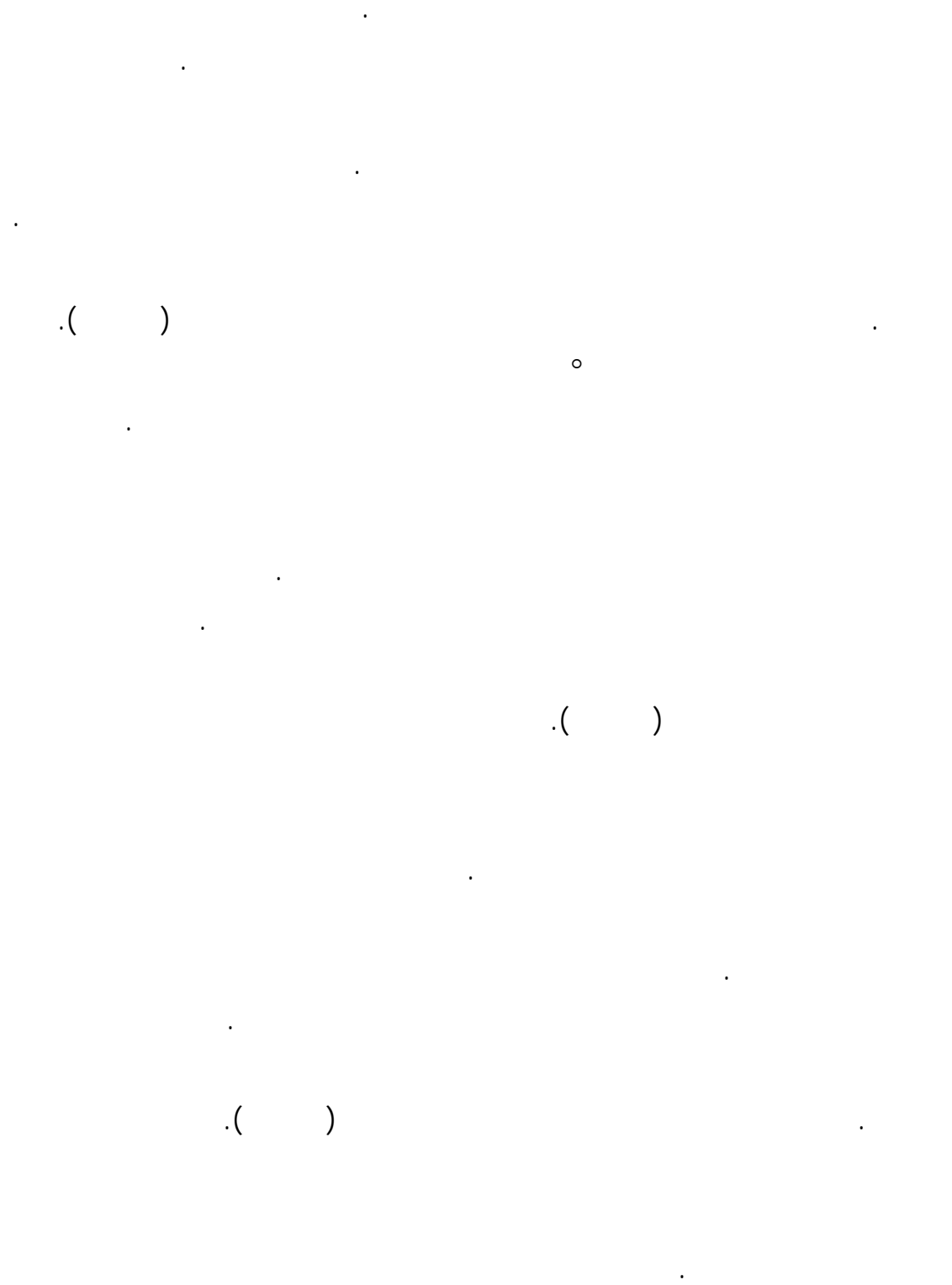
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KHz



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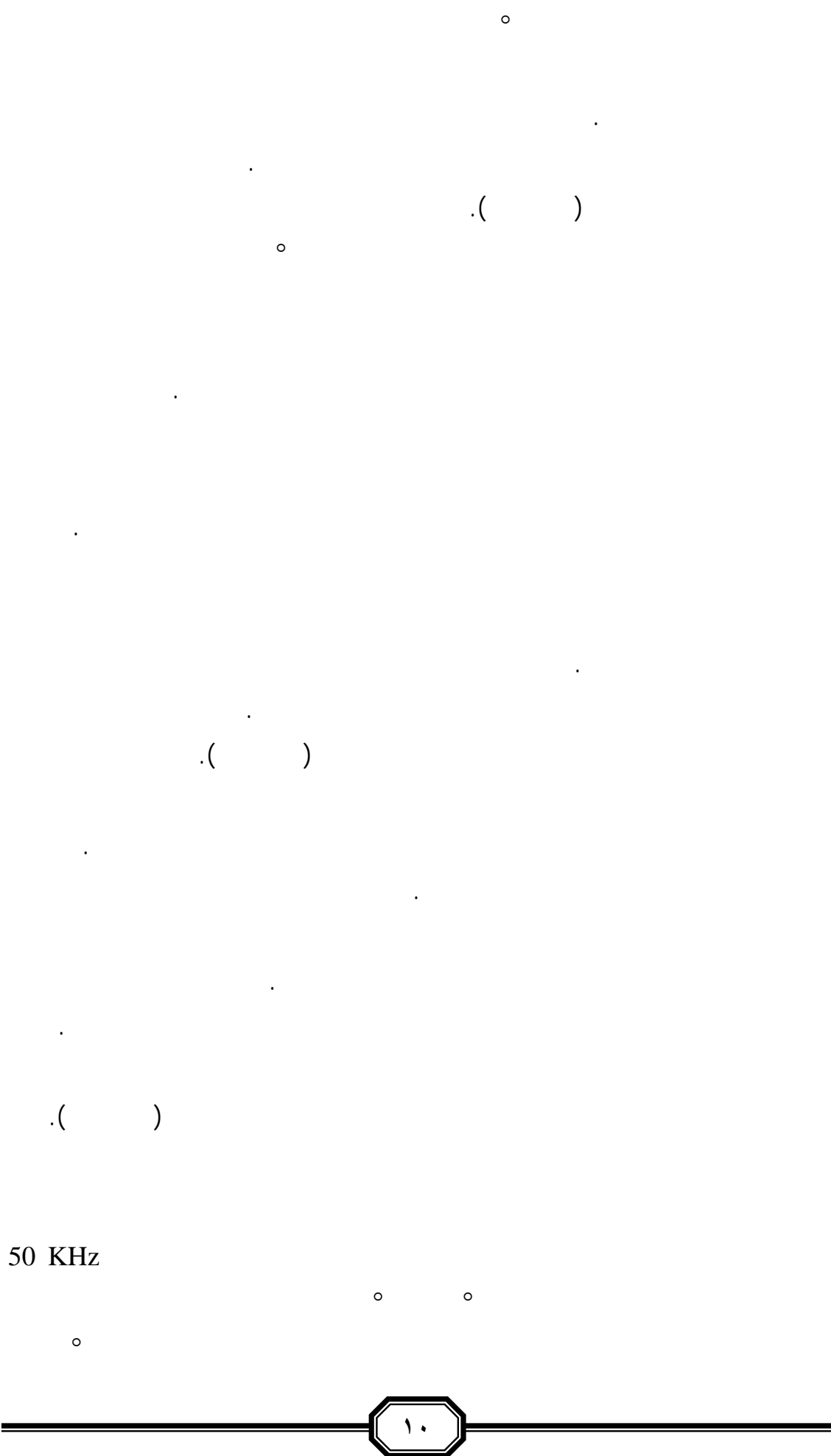
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(3.5 mT)

50 KHz

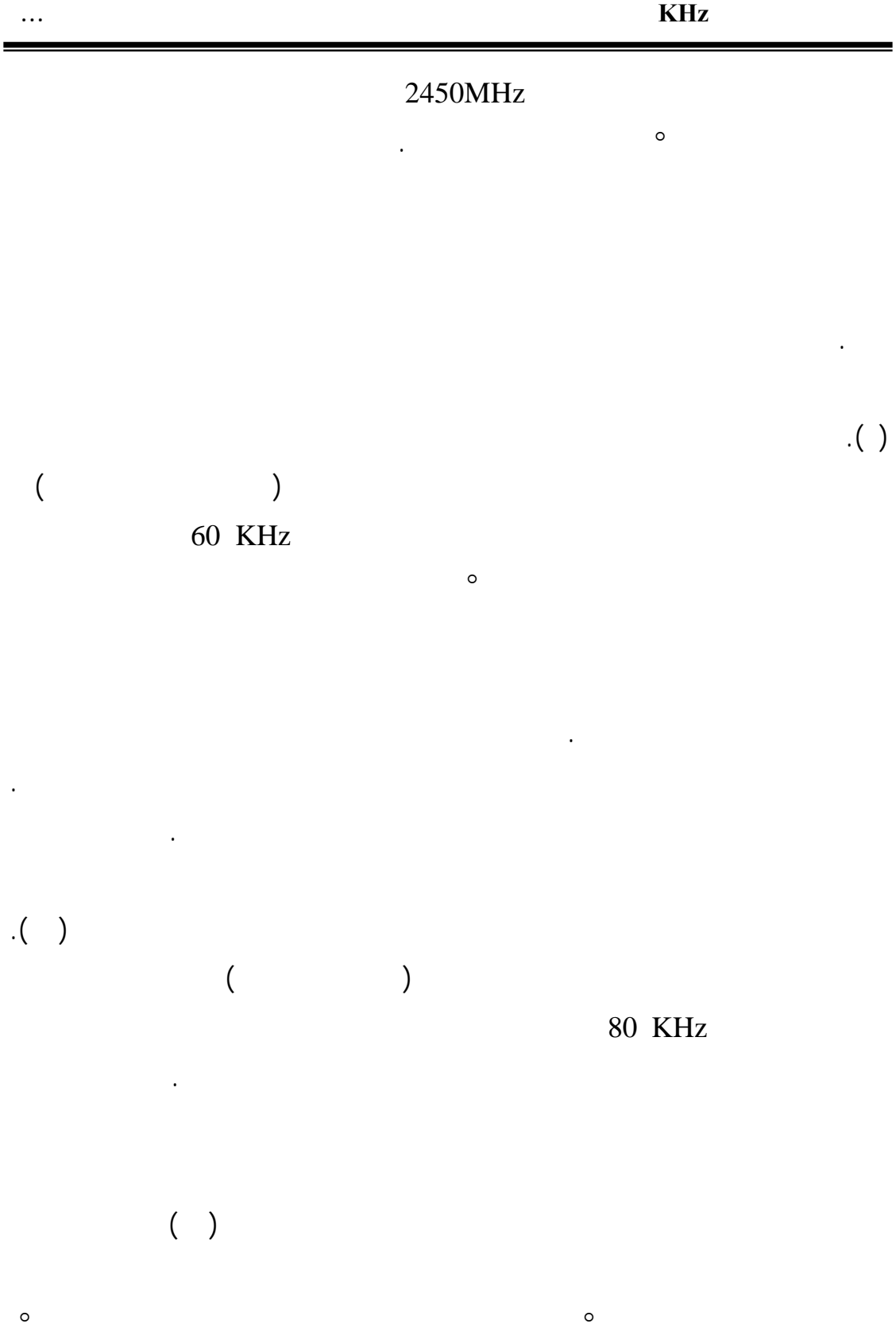
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(12.5 mT)

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Photocoagulation

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(ACE)

Sclera (SC)

Optic nerve (ON)

Area Centrales

(MC)

.Bruch's membrane (BM)

Retina (R)

Melanocytes

.Apical processes (AP)

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Lens capsule (LC)

Lens(L)

Lens

Lens fibres (LF)

.epithelium(LE)

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Ciliary region(CRE)

Ciliary epithilum (CI)

(SC)

Guanophore(GC)

(AN)

Blood vessels (BV)

Corneal

Stroma (ST)

Anuular ligament

.epithelium (CE)

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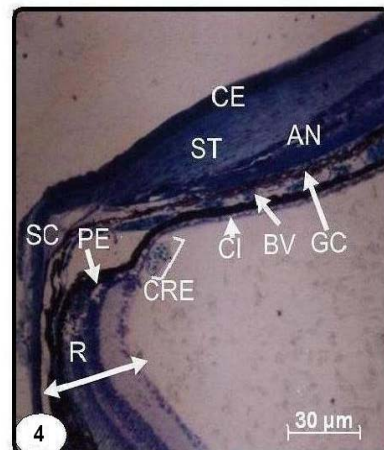
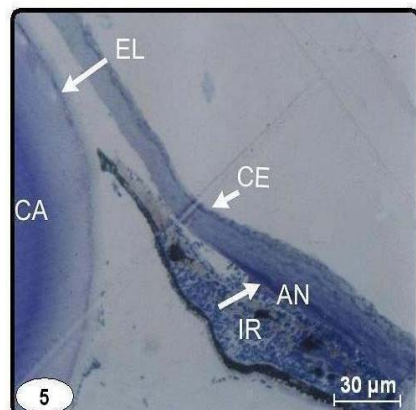
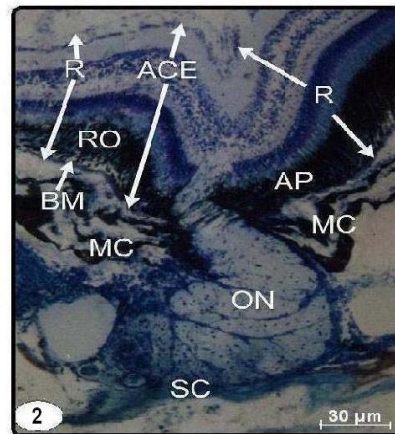
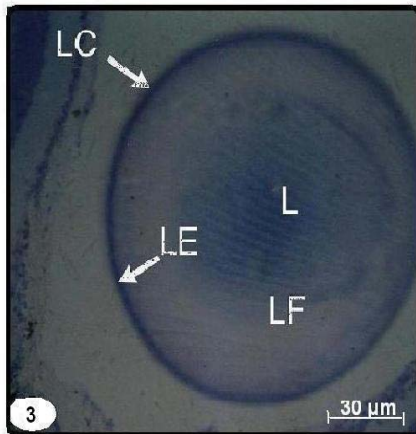
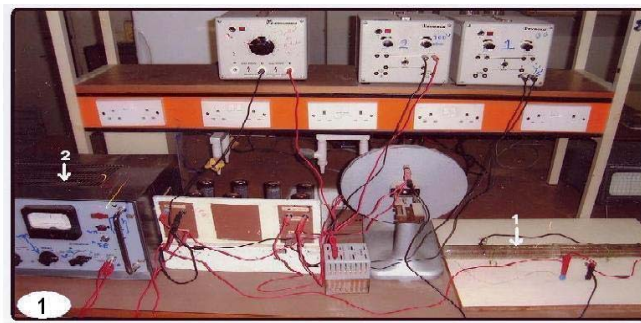
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LE

(↑)

.Iris (IR)

Anterior cataract (AC)



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Rods (RO)

(PE)

Cones(CO)

cone

Outer nuclear layer (ONL)

.Inner nuclear layer (INL)

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Hyperplasia (HY)

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Ganglion cell

Nerve fibers layer (NFL)

layer (GL)

Inner limiting membrane (ILM)

.Pigment epithelium layer (PE)

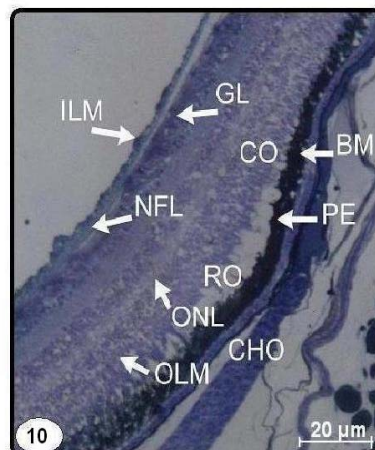
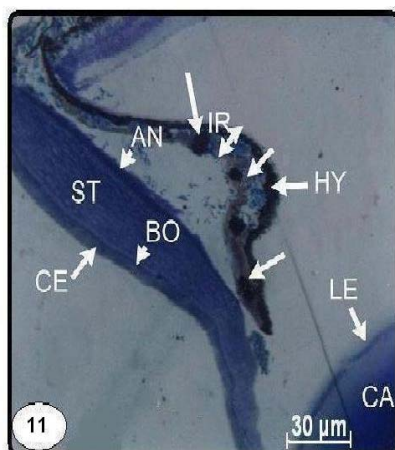
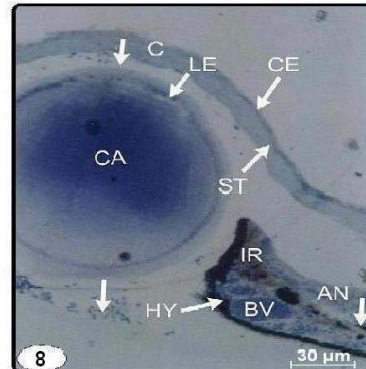
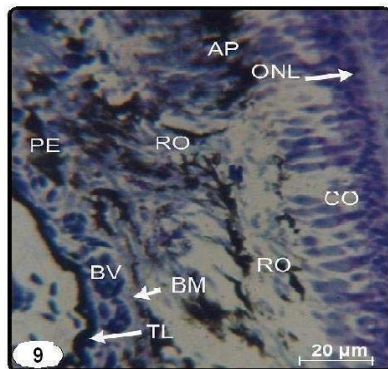
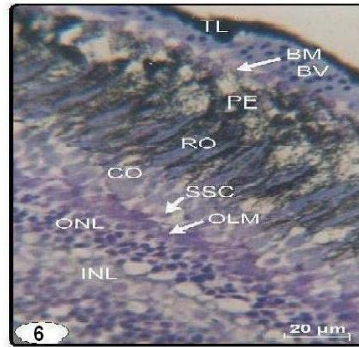
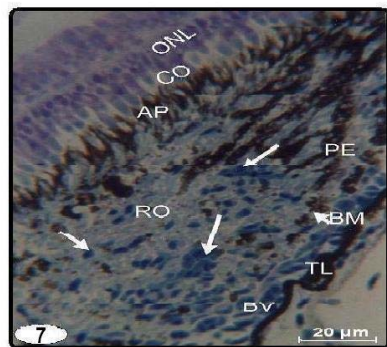
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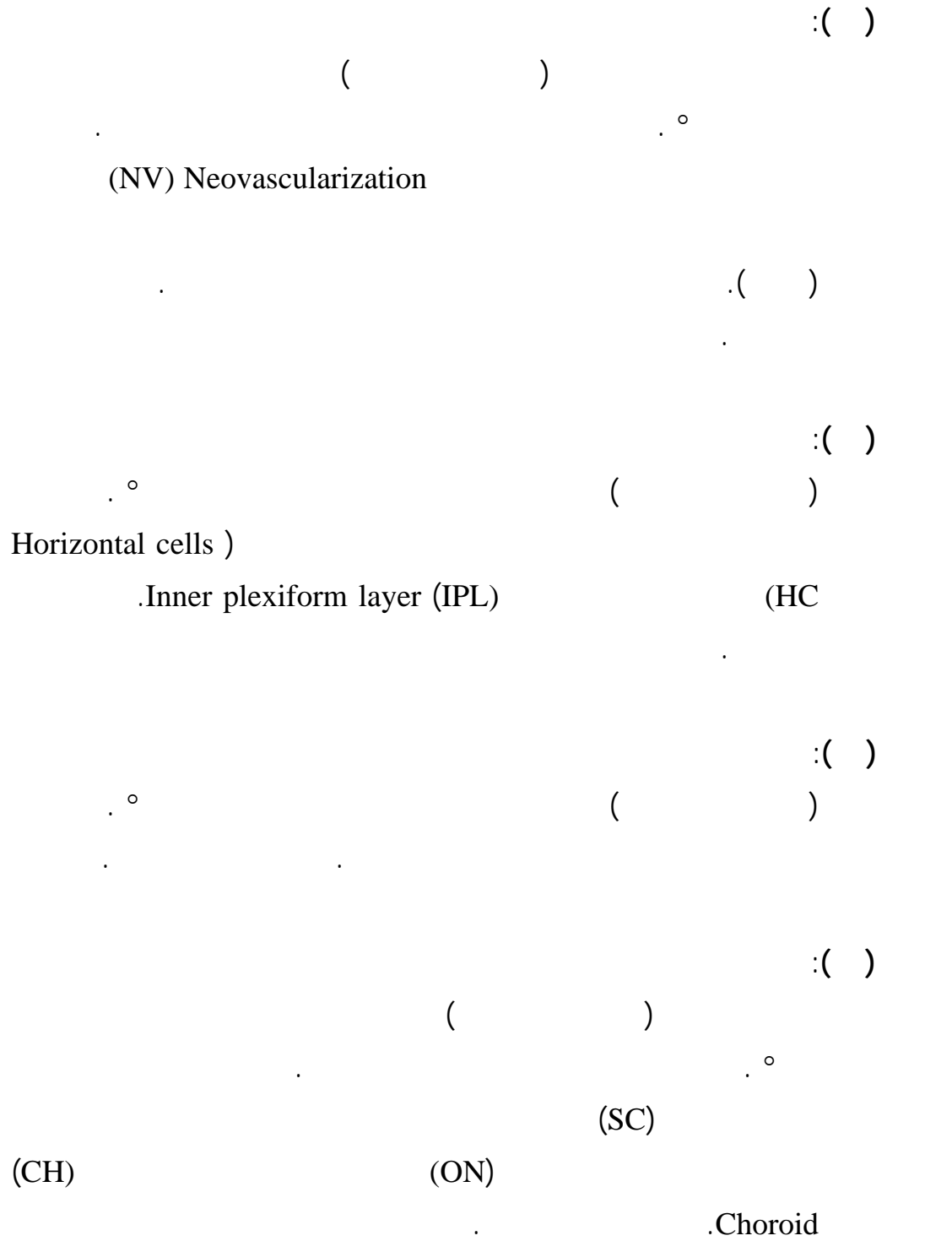
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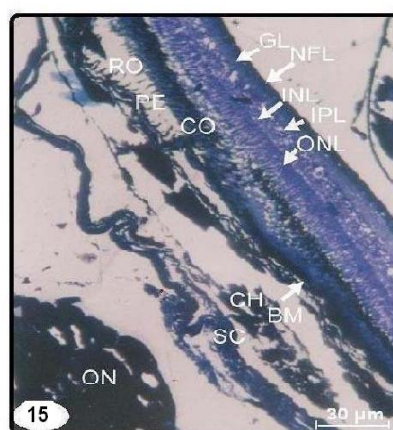
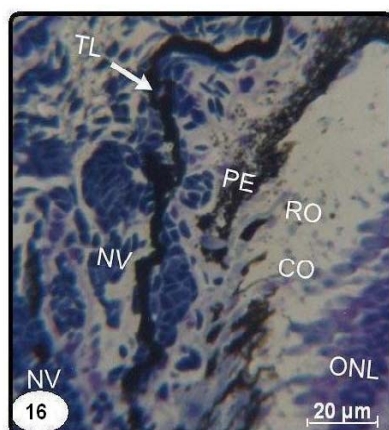
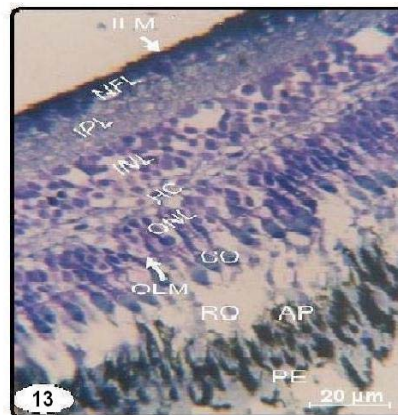
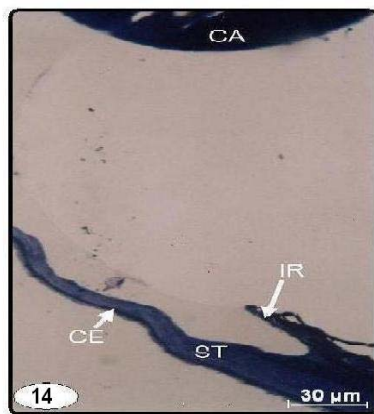
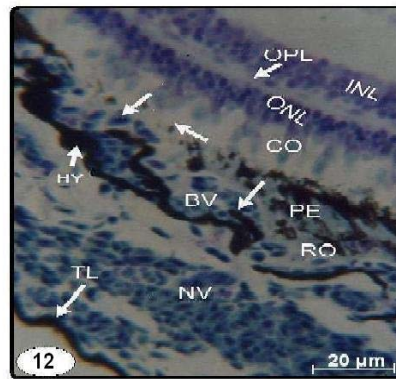
.(BO) Bowmans membrane

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 (TL) (NV)



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