

SUPPLEMENTARY INFORMATION  
FOR THE ARTICLE OF V. V. NEROEV et al.

**SkQ1 Returns Vision to Blind Animals Suffering  
from Retinal Pathologies (case descriptions)**

Below, some examples of successful therapy using drops of 250 nM SkQ1 are presented. In all cases, SkQ1 was used when other kinds of therapy (i.e. instillation of taufor, vitidurool, catachrome, emoxipin, gentamycin or *per os* treatment with ascorutin, vitamins A and E, riboxin) had already failed.

**Case 1.** A dog Bagz, dachshund, male, born August 2006, blind due to an inherited retinal dysplasia.

01.02.07. *Before SkQ1 treatment.* Blinking and pupil reflexes to light are absent, the animal does not orient in a labyrinth, fails to react on a ball moving near the eyes. The major part of *tapitum lucidum* is dark brown, the rest is blue-green and hyperreflective. Both a- and b-waves on the retinogram are of very much lower magnitude than normal.

09.02.07. *8-day treatment with SkQ1* (one drop of 250 nM SkQ1 solution into each eye daily). Some vision appeared. The dog recognizes the host at a certain distance and reacts to objects appearing near the eyes.

09.03.07. *One month of SkQ1 treatment.* Light-induced blinking and pupil reflexes as well as reaction to a ball can be shown. The dog orients in a labyrinth but at rather strong illumination only.

24.04.07. *2.5 months of SkQ1 treatment.* Appearance of ability to orient in the labyrinth even under dim light. The color of *t. lucidum* is normalized. The magnitude of waves in electroretinogram is significantly increased.

**Case 2.** A dog Greta, jackrussel terrier, female, born Nov., 2005. Blind due to an inherited retinal dysplasia.

12.01.07. *Before treatment.* Symptoms, state of *tapitum lucidum* are similar to Case 1 (see above). No light response on electroretinogram (Fig. 11, see color insert for the main text of the article; here and further figures designated without "S" refer to the main article).

17.01.07. *Five days of 250 nM SkQ1 instillation.* First signs of the seeing behavior appeared.

12.02.07. *One month treatment.* Like in Case 1.

22.03.07. *42 days treatment.* The electroretinogram clearly shows a response to light (Fig. 11).

**Case 3.** Morgan, a Pyrenean dog, male of two years old was blind due to uveitis pathology.

10.05.06. *Before treatment.* There are several gray and yellow-brown areas in the retina. Moreover, hyperemia of blood vessels and a hemorrhage of the retina were observed.

23.05.06. *13 days SkQ1 treatment* resulted in a partial recovery of vision, reappearance of reaction of the pupil

to the light and reduction of all signs of inflammation in the retina and the visual nerve disc.

10.07.06. *Treatment continued.* The dog recognizes not only large but also small objects.

**Case 4.** Bonya, a terrier, male, 2, was blind due to a progressing generalized bilateral retinal degeneration.

11.05.06. *Before treatment.* Depigmentation of *t. lucidum* (small white-yellow and extensive dark area). Depigmentation of *t. nigrum*. Peripheral blood vessels are constricted and the retinal nerve disc is white with uneven borders.

23.05.06. *12-day SkQ1 treatment.* Vision partially returned. Pupils react to light. The size of dark areas of retinal degeneration is decreased, and blood vessels are dilated. Retinal recovery occurs in a bilateral fashion.

21.06.06. *Treatment continued.* Further recovery of the retina. Original color of *t. lucidum* and the optic nerve disc returned. The dog recognizes objects not only in vicinity but also at long distance.

**Case 5.** A dog Bella, female, toy-terrier, 8. Blind because of progressing retinal degeneration.

05.09.06. *Before treatment.* The optic nerve disc has uneven borders, and *t. nigrum* is of a gray-brown color. Initial stage of senile cataract. Behavior and other parameters like in Case 1.

15.09.06. *10-day treatment.* The first signs of appearance of vision.

14.10.06. *After 40-day treatment.* Both vision and the state of retina are normalized.

**Case 6.** Cat Barsa, female, European short hair race, 15. Blind because of a combined retinal pathologies (retinitis, papillitis, generalized progressing retinal degeneration).

29.05.06. *Before treatment.* Depigmentation of *t. lucidum*, the optic nerve disc is violet, exfoliation of retina. No pupil reflex.

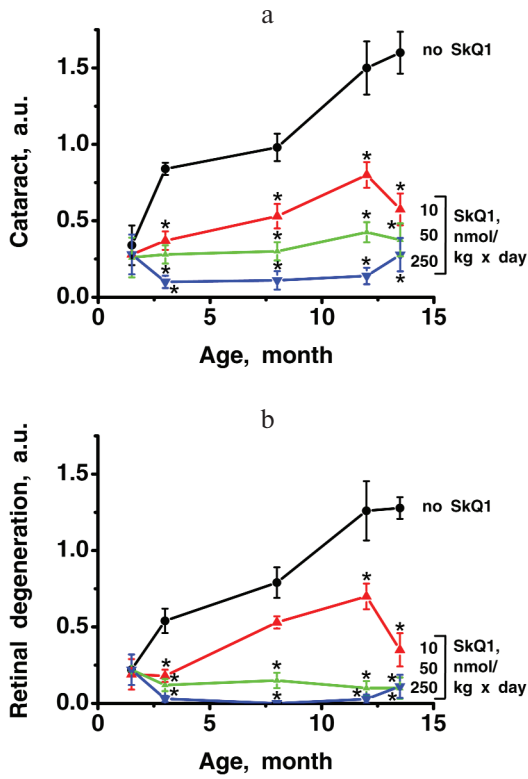
09.06.06. *11-day treatment.* Appearance of pupil reflex and some visual orientation. The optic nerve disc became pink but exfoliation of retina is still observed.

20.06.06. *20-day treatment.* Vision is normalized. Signs of retinal degeneration and exfoliation disappeared.

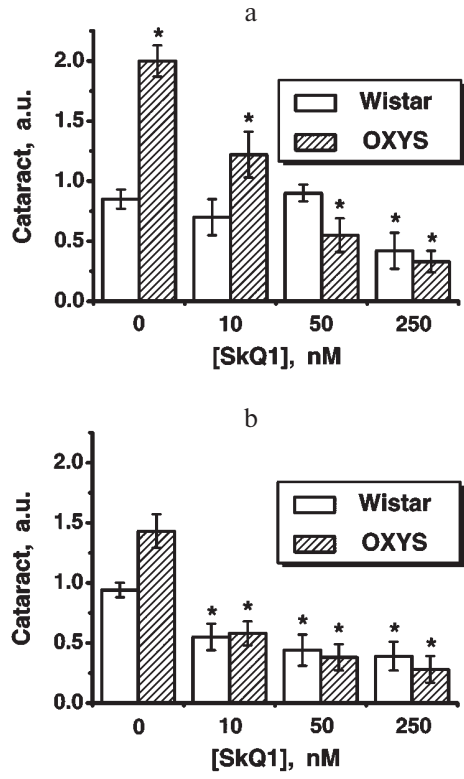
**Case 7.** Horse Mashuk, gelding, 20. Blind for 8 months because of a retinal pathology.

15.06.06. *Before treatment.* Blood vessels in region of the optic nerve are shorter and thinner than normal. Depigmentation of *t. lucidum* and *t. nigrum*. Retina is thin. Senile cataract.

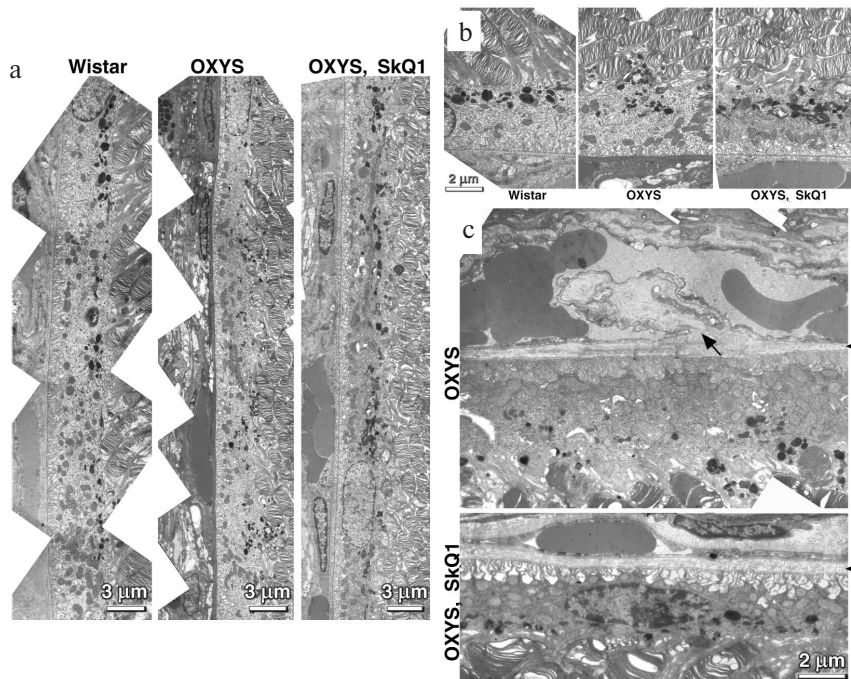
10.09.06. *80-day treatment.* The color of *t. lucidum* is normalized. New blood vessels appear in the region of the optic nerve disc. They are of normal length and diameter. The animal recognizes objects even at long distance.



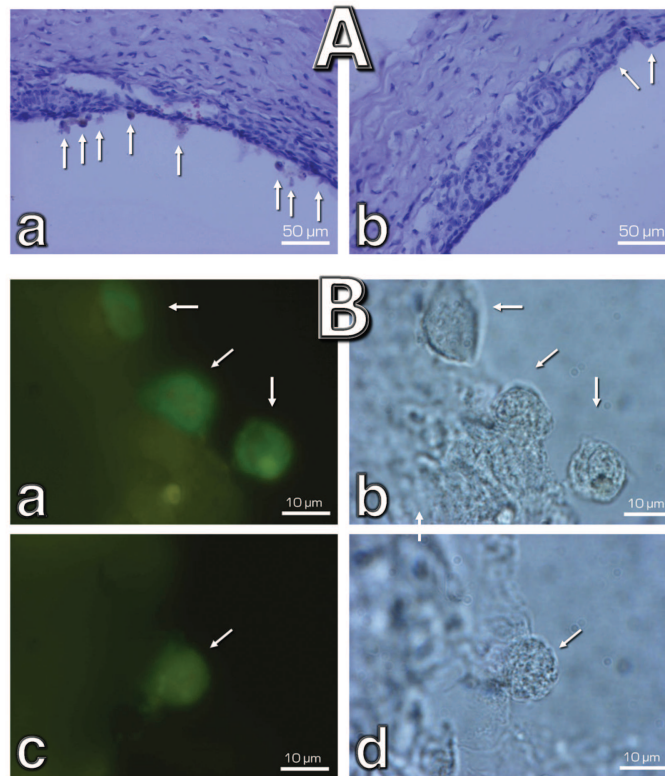
**Fig. S1.** Dynamics of cataract (a) and retinopathy (b) in OXYS rats. Where indicated, SkQ1 (10, 50, or 250 nmol/kg per day) was added to the food in the period of months 1.5-12.5.



**Fig. S2.** Effects of SkQ1 on cataract in Wistar and OXYS rats. a, b) Data of two different experiments are shown. 13.5-month-old rats received SkQ1 with food during months 1.5-12.5.



**Fig. S3.** Electron microscopic study of structure of the retinal pigment epithelium (a, b) and Bruch's membrane (c) of 11 month rats. Effects of 250 nM SkQ1 drops during the last 1.5 months are shown. c) Arrowhead, Bruch's membrane; arrow, hernia formed due to disruption of Bruch's membrane.



**Fig. S4.** Effect of 20 nM SkQ1 on the macrophagal transformation of RPE cells during a roller cultivation of rat eye posterior sector. A) A part of the tissue at low magnification. Without SkQ1, numerous cells escaping the RPE cell layer (arrows) are seen (a). Their number is much smaller when SkQ1 was added to the cultivation mixture (b). B) Macrophage transformation of the RPE cells. Left, macrophage antigen staining; right, phase contrast. Arrows, macrophage-positive cells; a, b) without SkQ1; c, d) with SkQ1.