

Microscopic structure of cornea in European bison *Bison bonasus* L. - preliminary results

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Introduction

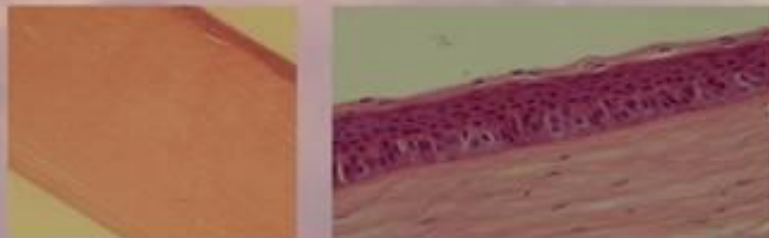
The eye is admittedly one of the most important sense organs in mammals, vertebrates and invertebrates. It has the ability to process visual detail. The cornea has the very important role to protect this delicate organ as well as through its structure enable the light to reach the deepest part of the eye, the retina.

Aim of the study

The aim of this study was an detailed description of the morphologic and metric structure of the layers of the cornea.

Materials and methods

Samples were collected from 28 mature European bisons. The material was collected from animals that were culled at Białowieża Forest, the European Bison Breeding Centre at Smardzewice and Borki. The group consists of mature males from the age of 5 and females from the age of 3 years. The eyeballs were extracted and dissected and fixed in 4% formaldehyde. The cornea was dissected along the sclera. After fixation, specimens were processed by common paraffin technique, cut and stained with haematoxylin and eosin.



Results

The cornea of the European bison has five layers. From the anterior to posterior the layers of the cornea are: Corneal epithelium anterior limiting membrane, corneal stroma, posterior limiting membrane and corneal endothelium. The thickest of the layers is the corneal stroma constituting about 83% of the cornea. The thinnest layer is the corneal endothelium.

Discussion

The transparent cornea is made of connecting tissue containing no blood vessels and covers the anterior chamber of the eye. It has nerve endings sensitive to touch. A touch of the cornea causes an involuntary reflex to close the eyelid. The bison belonging to the ungulates, the shape of this organ is oval. In carnivores it is different. Here the convexity of the cornea is close to a fragment of a sphere and the outline is almost round.

Conclusions

Statistics show that the cornea of younger specimens is thicker than in older ones. Similar observations were made in both groups, males and females. It would be beneficial to compare the on-going studies with studies on cattle, like studies on the epidemiology of *Moraxella bovis*, a bacterium responsible for epidemic ceratoconjunctivitis.