# The cornea of Guinea pig: structural and functional studies

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## RESUMEN

Objective to describe the functional and structural characteristics of the cornea in healthy Guinea pigs. Animals studied Healthy male and female pigmented and albino Guinea pigs (Caviaporcellus) aged 3-5 months old were used. Procedures The animals' corneas underwent different in vivo studies including: slit-lamp biomicroscopy, fluorescein staining (FS), break-up time test (BUT), confocal microscopy and pachymetry. The corneas were also studied histopathologically with light microscopy, immunohistochemistry and transmission electron microscopy. Results No significant differences were found between pigmented and albino animals, male and female, OD and OS in any study performed. The differences on corneal thickness values were not significant among central (227.85 ± 14.09 µm) and upper and temporal peripheral regions (226.60 ± 12.50 and 225.70 ± 14.40 µm, respectively). All histological studies performed permitted identification and precise description of the different corneal structures in Guinea pigs: the stratified epithelium (45.52 ± 5.26 µm), Bowman's layer (2.23 ± 0.38 µm), stroma (163.69 ± 4.90 µm), Descemet's membrane (3.96 ± 0.46 µm) and the endothelium (5.09 ± 0.71 µm). Combining results from all eyes mean and SD from corneal BUT values was 4.98 ± 1.67 s. Corneas often showed discrete superficial erosions being the FS positive in both eyes from all the animals. Conclusion This study provides a detailed in vivo and postfixed histological description of the Guinea pig's cornea and information about the physiological tests.

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