

Purpose: The aim of this work was to characterize the spectrum of cytokeratin 1 - 20 expression in healthy cornea, limbus and conjunctiva. The next aim was to determine whether the expression of cytokeratin 7 can be a marker of limbal stem cell deficiency.

Materials and methods: The spectrum of cytokeratins was studied using immunofluorescent staining of cryosections from healthy cornea, limbus and conjunctiva. The expression of cytokeratin 7 was detected by immunofluorescent staining on Millicell membranes. The epithelium of healthy cornea and conjunctiva and the epithelium of the cornea and conjunctiva of patients suffering from limbal stem cell deficiency were assessed.

Results: The typical corneal cytokeratin 3/12 was present in the corneal epithelium. Cytokeratins characteristic of simple epithelium (cytokeratins 8, 18, 19), stratified epithelium (cytokeratins 4, 5, 13, 14) and hyperproliferation (cytokeratin 16) were also present in the human cornea. The limbal epithelium was positive for cytokeratins characteristic of simple epithelium (cytokeratins 8, 18, 19), stratified epithelium (cytokeratins 4, 5, 13, 14, 15) and the cornea-specific cytokeratin 3/12. The conjunctival epithelium showed immunostaining for cytokeratins characteristic of simple epithelium (cytokeratins 7, 8, 18, 19), stratified epithelium (cytokeratins 4, 5, 13, 14, 15) and cytokeratin 3/12. Cytokeratins 8 and 18 were present in the corneal endothelium, while the stroma was negative for all cytokeratins.

The overgrowth of the conjunctival epithelium over the corneal epithelium was detected in specimens obtained from patients with limbal stem cell deficiency using antibodies against cytokeratin 7.

Conclusion: The localization of cytokeratins in healthy cornea, limbus and conjunctiva shows a typical expression in individual epithelial layers. This indicates that cytokeratins may be used as specific markers for the diagnosis of cornea pathologies. Cytokeratin 7 is a marker for the superficial conjunctival epithelium, and its presence on the corneal surface can serve as a marker of limbal stem cell deficiency.