

# COVID-19 OCULAR ASSOCIATIONS IN THE SCIENTIFIC LITERATURE: SYNOPSIS 20

The COVID-19 pandemic began in December and has affected people in nearly every country in the world. We provide a summary of ocular-related associations with COVID-19 in the literature, and we plan to update this as we become aware of new manuscripts. Thus far, it appears that approximately 1-5% of COVID-19 patients experience conjunctivitis and very few COVID-19 patients exhibit virus in their tears.

**Willcox MDP, Walsh K, Nichols JJ, et al. The ocular surface, coronaviruses and COVID-19. Clinical and Experimental Optometry. 2020**

- Review paper
- SARS-CoV-2 causes COVID-19
- SARS-CoV-2 uses angiotensin converting enzyme-2 (ACE2) as its receptor on human cells, which leads to infection
- Corneal epithelial and conjunctival cells contain receptors to bind SARS-CoV-2, but not the proteins required to bind the virus to the receptor
- Lactoferrin, present in high concentration in the tears, prevents viral attachment to the receptor
- There are few animal studies of SAR-CoV-2, and only one report of the ocular surface
  - A non-peer reviewed paper indicated that large loads of virus applied to the conjunctiva resulted in much less severe pneumonia than virus applied to the trachea
  - No conjunctivitis occurred in the animal in which virus was applied to the conjunctiva
  - Indicates that virus from the conjunctiva either reaches the lung less frequently or the virulence is diminished
- Very few cases of conjunctivitis have been associated with COVID-19
- Combining results from a number of studies, only 5% of COVID-19 (+) cases that have undergone ocular surface swabs have detected SARS-CoV-2 in the sample
- Conclusions: “Precautions employed by both eye-care practitioners and patients during the COVID-19 pandemic remain necessary to minimize viral transmission via person-to-person contact. It is reassuring to recognize that current evidence suggests the virus is unlikely to bind to the ocular surface to initiate infection, and that the ocular manifestations such as conjunctivitis and presence of SARS-CoV-2 in tears have so far only been found rarely and primarily in people with confirmed, symptomatic COVID-19.”



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