

## TOPICAL EFFICACY OF HUMAN UMBILICAL CHORD BLOOD SERUM ON DRY EYE SYNDROME

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**Aim:** This study set out to address the therapeutic effects of topically applied mesenchymal stem cells (MSCs) and human umbilical cord blood serum (HUCS) on dry eye syndrome (DES) induced by benzalkonium chloride (BAC) in rats. **Material-method:** 0.2% BAC was applied topically to the right eyes of the rats included in the study twice a day for one week duration. After induction of dry eye, 7 eyes were administered phosphate buffer saline (group 1), and 10 eyes were administered human umbilical chord blood serum (group 2) once a day for one week duration. The two groups were compared with each other regarding results of Schirmer test, tear break-up time (TBUT), corneal inflammatory index score and tests evaluating ocular surface (Rose-Bengal and Fluorescein staining) at the baseline, at 1st week at the end of BAC application and at 2nd week at the end of the treatment. At the end of the 2nd week, all rats were sacrificed, and the enucleated eyes were examined both histologically and with electron microscopy. **Results:** Aqueous tear volume and tear break-up time were significantly higher in group 2 ( $p=0.01$  and  $p=0.05$ , respectively), whereas corneal epithelial fluorescein and rose bengal scores were significantly lower in group 2 ( $p=0.02$  and  $p=0.02$ , respectively). In electron microscopic examination, group 1 had reduced goblet cell count and secretory granules. Microvilli at the apex of corneal epithelium was not observed in group 1 but was present in group 2. Contrary to group 1, there was no corneal or conjunctival inflammatory signs in group 2. Corneal inflammatory index score was significantly lower in group 2 ( $p=0.05$ ). **Conclusion:** It was found that topical application of HUCS in dry eye-induced rats resulted in improvements in dry eye parameters.