

EXPRESSION OF MATRIX METALLOPROTEINASES (MMP-2 and MMP-9) AND TIMPs 1 and 2 IN EXPERIMENTAL HERPES SIMPLEX VIRUS KERATITIS

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**Purpose** To determine the distribution of metalloproteinases (MMPs) and tissue inhibitors of metalloproteinases (TIMPs) during the course of experimental herpes simplex virus (HSV) type-1 keratitis. **Methods** Keratitis was induced in BALB/c mice by infecting the right cornea with 10<sup>5</sup> PFU of HSV-1 (KOS strain). Mice were followed for the clinical signs of keratitis. Corneas were harvested at days 2, 7 and 14 pi. Corneal sections were immunostained with antibodies directed against MMP-2, MMP-9, MMP-8, TIMP-1 and TIMP-2. **Results** Epithelial HSV keratitis was present at day 2 pi, and healed until day 7 pi. At day 2 pi, the MMP-2 and MMP-9 expression increased in the epithelium and it was detected in the stroma beneath the epithelial disease. The MMP-2 and MMP-9 staining persisted until day 14 pi. Similar staining patterns were detected for TIMP-1 and TIMP-2. - Severe stromal keratitis was present at day 14 pi. This correlated with an increased expression of MMP-2 and MMP-9 in the stroma, and an intense staining was found at the ulcers. The MMP-8 staining was localized at the infiltrating neutrophils, which were abundant at the site of ulceration. **Conclusions** The data suggest that MMPs produced by resident corneal cells and by neutrophils possibly play a role in epithelial keratitis and in the ulcerative process after corneal HSV-1 infection. TIMPs might participate in the repair process. Studies are in progress to determine the enzymatic activities.

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