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Cyclosporine A-Loaded Nanocarriers for Topical Treatment of Murine Experimental Autoimmune Uveoretinitis.

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Abstract

In the present study, tissue distribution and the therapeutic effect of topically applied cyclosporine A (CsA)-loaded methoxy-poly(ethylene-glycol)-hexyl substituted poly(lactic acid) (mPEGhexPLA) nanocarriers (ApidSOL) on experimental autoimmune uveitis (EAU) were investigated. The CsA-loaded mPEGhexPLA nanocarrier was tolerated well locally and showed no signs of immediate toxicity after repeated topical application in mice with EAU. Upon unilateral CsA treatment, CsA accumulated predominantly in the corneal and sclera-choroidal tissue of the treated eye and in lymph nodes (LN). This regimen reduced EAU severity in treated eyes compared to PBS-treated controls. This improvement was accompanied by reduced T-cell count, T-cell proliferation, and IL-2 secretion of cells from ipsilateral LN. In conclusion, topical treatment with CsA-loaded mPEGhexPLA nanocarriers significantly improves the outcome of EAU.