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Controllable continuous sub-tenon drug delivery of dexamethasone disodium phosphate to ocular posterior segment in rabbit

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Aim: To explore the feasibility of Sub-tenon's Controllable Continuous Drug Delivery to ocular posterior segment.

Materials & Methods: Controllable continuous sub-tenon drug delivery (CCSDD), intravenous injections (IV) and sub-conjunctival injections (SC) were used to deliver Dexamethasone Disodium Phosphate (DEXP) in rabbits, the dexamethasone concentration were measured in the ocular posterior segment tissue by high-performance liquid chromatography-mass spectrometry method (HPLC-MS) at different time points in 24 hours after first dose injection.

Results: Levels of dexamethasone were significant higher at 12, 24 hour in CCSDD than two other approach, and at 3h, 6h in CCSDD than IV in vitreous body ($P < 0.01$); at 6h, 12h, 24h in CCSDD than two other approach, and at 1h, 3h in CCSDD than IV in retinal/choroidal compound ($P < 0.01$); at 3h, 6h, 12h, 24h in CCSDD than two other approach, and at 1h in CCSDD than IV in scler ($P < 0.05$). The AUC₀₋₂₄ in CCSDD group is higher than two other groups in all ocular posterior segment tissue.

Conclusion: Our results demonstrated that dexamethasone concentration could be sustained moderate higher in the posterior segment by CCSDD than SC and IV, indicated it might be a therapeutic alternative to treat a variety of intractable posterior segment diseases.

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