

Targeted ocular drug delivery within the suprachoroidal space using a microneedle

정재환[†]

단국대학교

(jjaehwan326@gmail.com[†])

The suprachoroidal space (SCS), a potential space between the sclera and choroid, is a novel route for drug delivery targeting the chorioretinal layers of the eye. SCS injection can improve the bioavailability of drugs targeting their site of action with significant dose sparing. In addition, SCS injection allows drugs to flow circumferentially from an anterior injection site near the limbus posteriorly to the macula and optic nerve. The safety and efficacy of SCS drug delivery have been shown in multiple clinical trials. Microneedles used for SCS delivery are similar to hypodermic needles but measure only ~1 mm in length. This design facilitates perpendicular penetration across the conjunctiva and sclera to the sclera-choroid interface, which targets injection into the SCS in a minimally invasive way. Recently, I have developed methods for more precise targeting within the SCS at sites of action at the posterior pole (e.g., macula), near the limbus (e.g., ciliary body), and throughout the SCS using iontophoresis, swollen hydrogels, collagenase, and in-situ forming hydrogel. Here, I introduce novel technologies targeting the posterior, anterior, or entire SCS using a microneedle.