

UV strengthened temperature-responsive microneedle containing cin poly(hydroxyethyl acrylate(HEA)-co-butyl methacrylate(BMA) )

Zhao Fanyu, 김진철<sup>1,†</sup>

강원대학교; <sup>1</sup>강원대학교 의생명과학대학

(jinkim@kangwon.ac.kr<sup>†</sup>)

Microneedles were prepared by three kinds of basic materials--hyaluronic acid, collagen, and trehalose. In addition, cinnamoyl poly(hydroxyethyl acrylate-co-butyl methacrylate) (CinP(HEA-BMA)) was added. If HEA was copolymerized with a hydrophobic monomer, and this copolymer would exhibit LCST behavior. So the microneedles containing CinP(HEA-BMA) were temperature sensitive material. Without UV irradiation, the cinnamoyl group of CinP(HEA-BMA) was not cross linked, the stiffness of the needles almost no changed. Once exposed to UV light, cinnamic acid would cross-link, and the needle hardness would increase with the increase of cinnamoyl group. Because they were temperature-sensitive microneedles, as the temperature rised, the skin permeation increased, but after the microneedlse were irradiated with UV light, crosslinking occurred inside, so the permeation degree of the microneedles with more when the cinnamoyl groups was smaller.