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강연제목: 수술 후 뇌종양 치료를 위한 침투성 약물 전달 전략 Penetrative drug delivery strategies for postsurgical brain tumor treatment

Abstract: Post-surgical treatment of brain tumors by the gold standard of care is still ineffective. Tumor cells that deeply infiltrated into the brain are the main causes of recurrence, which hinders complete recovery of brain tumors. Here, we present promising drug delivery platforms for preventing the recurrence of brain tumors. First, a flexible, sticky, and biodegradable drug-loaded patch integrated with wireless electronics is proposed. The flexible and bifacially-designed sticky device allows conformal adhesion on the brain and provides extended drug delivery to brain tumors while minimizing drug leakage to the cerebrospinal fluid. Second, an injectable thermo-responsive hydrogel nanocomposite is presented. It is injected as liquid state, and be promptly solidified in deep brain region to form soft intracortical drug reservoir. Both platforms exploit external magnetic fields to wirelessly accelerate drug diffusion through heat generation, enabling penetrative drug delivery. Biodegradability, and therapeutic efficacy of the platforms are demonstrated *in vivo* in mouse brain model, proving its potential for clinical translation.

Brief Biosketch

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중앙대학교 시스템생명공학과 조교수

연구분야

1. Synthesis, engineering, and application of the functional hydrogels
(기능성 하이드로겔의 합성, 공정 및 응용)
2. Fabrication and application of bioelectronics for *in vivo* applications
(생체전자소자의 제작 및 임상 응용)

