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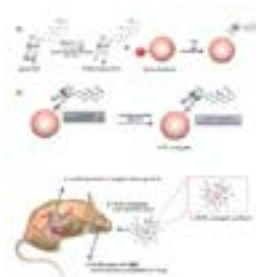
MATERIALS SCIENCE AND ENGINEERING

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Angiogenesis depression effect; a cure for glioblastoma multiforme through oral administration by lactoferrin-glycyrrhizin conjugate, as HMGB1 antagonist

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Glioblastoma multiforme (GBM) is one of the most common and aggressive brain tumors in humans. Recently, to cure GBM clinically, antiangiogenic therapy with medications such as Avastin is tried to slow the GBM growth. However, this drug can induce some side effects like stroke and kidney problem. To improve this problem, we newly developed an orally absorbable glycyrrhizin (GL) that can bind to HMGB1 and overexpression of HMGB1 induces angiogenesis on the tumor tissue. Also, we conjugated GL with Lactoferrin (Lf) for oral administration, Lf can be absorbed by receptor (Lf-R) that is expressed on the small intestine, blood-brain barrier (BBB) and glioma cell. We expected potential of GBM region targeting and anti-angiogenesis via HMGB1 capturing, when the lactoferrin and glycyrrhizin (Lf-GL) was orally administered. Through this research, we confirmed that conjugation between the Lf-GL, which had increasing HMGB1 binding affinity. In addition, this material showed effect that is growth inhibition of GBM spheroid and anti-angiogenesis and vascular regression on the in vitro model. And then, we preferentially confirmed effect of LF-GL on cancer tissue in the xenograft mouse model and proceeded experiments to confirm anti-angiogenesis and possibility of orally absorbable in the GBM orthotopic mouse model. consequently, these results demonstrated that the Lf-GL would be a novel drug for the effective treatment of brain tumor.



Biography

Hae Jin Kim graduated from Sejong University, Department of Bioengineering at the age of 24, and progressed to master's course in Hanyang University. She is mainly working on cancer. In particularly, she studies the development of newly drug for the treatment of brain cancer and improving the method of administration. She has identified that the prognosis of disease is poor because drug delivery to the brain was difficult by blood-brain barrier. To improve this problem, she synthesized novel material for convenient administration method and targeting effect to the brain.

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