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Extended Abstract
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Preparation and tumor-suppressing effects of folic acid-targeted temperature-sensitive magnetoliposomes in ovarian cancer

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Background & Aim:
Ovarian cancer is a tumor with a poor prognosis. It is a common gynecological malignancy and because of the heat sensitivity and the unique nature of ovarian cancer development, the development of effective anti-ovarian cancer techniques involving hyperthermia may have clinical value. We prepared folate-targeted thermosensitive liposomes wrapped with 17-AAG chemotherapy drugs and superparamagnetic material (17-AAG/MTSLs-FA) and assessed combined magnetic fluid hyperthermia with ovarian cancer SKOV3 cells in vitro and in vivo. The folate receptor (FR) is a perceived biomarker for tumor cells because of its overexpression on an enormous number of tumors. Thus, the FR has been misused by numerous analytic and restorative devices to permit focused on conveyance to, and imaging of, malignant growth cells. There are various methodologies by which this has been accomplished, including the connection of folate to strong chemotherapeutic medications to frame FR-focusing on little particle sedate conjugates (SMDCs), FR-focusing on antibodies (as immunizer alone and as a counter acting agent tranquilize conjugate), and as integral nanotechnology–folate stages; just as imaging variations thereof. The capability of abusing the FR for focused treatment/imaging can possibly reform the manner in which a few malignancies are dealt with. These FR-focused on innovations can likewise prepare for moving additionally advanced medication conjugates, particularly as this receptor is being focused by utilization of a few reciprocal advances: little atom, nanoparticle and protein-based – accordingly giving expansive and unmistakable information in the region. Folate receptors are profoundly overexpressed on the outside of numerous tumor types. This articulation can be abused to target imaging atoms and helpful mixes legitimately to malignant tissues. The folate receptor, a glycosylphosphatidylinositol tied down cell surface receptor, is overexpressed on by far most of malignancy tissues, while its demeanor is restricted in sound tissues and organs. Folate receptors are exceptionally communicated in epithelial, ovarian, cervical, bosom, lung, kidney, colorectal, and cerebrum tumors. Sarcomas, lymphomas, and tumors of the pancreas, gonads, bladder, prostate, and liver frequently don't show raised degrees of folate receptors.
Methods:
The attractive thermosensitive liposomes wrapped with 17-AAG chemotherapy drugs and synthetically co-accelerated Fe3O4 attractive nanoparticles were set up by a rotational dissipation technique. The liposome morphology and conveyance was watched utilizing TEM, molecule size and zeta potential were estimated by a powerful light dispersing strategy, tranquilize exemplification productivity was identified by UV spectrophotometry and the temperature-controlled discharge properties were dictated by a dialysis technique. Investigations were led utilizing the SKOV3 human ovarian malignant growth cell line and MCF7 human bosom carcinoma cells to assess hostile to tumor impacts.
Results:
17-AAG/MTSLs-FA prepared in this study met the basic requirements; the preparation method is simple and the raw materials are readily available. The product exhibited strong magnetic and high encapsulation efficiencies, good performance and low toxicity. The liposomes combined with hyperthermia inhibited the proliferation of human ovarian cancer SKOV3 cells significantly and induced apoptosis. There was an intergroup difference in doubling time in vitro and in vivo ($P<0.05$).
Conclusions:
Folic acid-conjugated 17-AAG magnetic thermosensitive liposomes in combination with an alternating magnetic field for heating can achieve a combined synergistic anti-tumor effect of the chemotherapy and heat treatment, potentially offering a new method for ovarian cancer treatment.