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A novel dual-targeted and biomimetic Doxorubicin nanocarrier

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Epithelial ovarian cancer is the leading cause of death among gynecologic malignancies. Ovarian cancer cells can develop folate receptors that are not overexpressed on somatic cells, making it possible to exploit these receptors for anticancer therapy. In addition, magnetic agents can be directed to tumor tissues via an external magnetic field and this may mostly eliminate the side effects of classical oral treatment. Doxorubicin is used for ovarian cancer therapy but its usage is limited due to the side effects. Recent advances in molecular and cellular biology have inspired scientists and nanotechnologists to model nanocarriers after red blood cells, which are nature's long circulating delivery vehicles. Properties of red blood cells such as their structure and surface proteins have been taken as design cues to devise the next-generation delivery platforms. In this work, we aimed to design a novel biomimetic doxorubicin nanocarrier system that targeted with magnetically and biomolecularly via folate ligand for ovarian cancer therapy. Magnetic nanoparticles were prepared with the combination of magnetite, polysaccharide and polyethylene glycol. Doxorubicin was loaded to this carrier system. Finally, red blood cells and folate ligand were used to acquire biomimetic properties and biomolecularly targeting, respectively. This biomimetic doxorubicin nanocarrier could have potential for effective ovarian cancer treatment.

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Biography

Guliz Ak has completed her Msc studies from Ege University, Faculty of Science Biochemistry Department and initiated her PhD studies in 2010 in the same department. She has been working as a Research Assistant in Ege University, Faculty of Science Biochemistry Department since 2010 and also as a Researcher in Ege University Pharmacokinetic Drug Development & Research Center (ARGEFAR) Biosimilar Products Department Proteomics Unit since 2013. She is a Funded Researcher in two projects about nano-particular anticancer agent researches.

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