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Inhibitory effect of chrysin-loading nanoparticles on tumor progression

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Introduction & Aim: Chrysin which is included in various plants, honeycomb and mushrooms, has diverse biological activities. However, its poor bioavailability due to low solubility is hindrance for pharmaceutical field. To overcome chrysin's defect and expand the application of chrysin, we loaded chrysin into copolymer nanoparticles (NPs) and evaluated its activity in triple-negative breast cancer (TNBC) xenograft models.

Method: To assess the tumor progression, MDA-MB-231 cells (TNBC) and endothelial colony forming cells (ECFCs) were co-transplanted into mammary fat pad of Balb/c nude mice. Chrysin was incorporated into methoxy poly(ethylene glycol)-β-polycaprolactone copolymer NPs using an oil-in-water technique. Chrysin-NPs were intravenously injected every 2 days, 3 times per week. Tumor growth was measured and isolated tumor tissues were observed by histological analysis methods.

Result: The loading-efficiency of chrysin-NPs was 55%. NPs showed no-cytotoxicity and chrysin-NPs kept biological activities of chrysin, originally. Chrysin-NPs significantly delayed TNBC tumor growth and reduced tumor weights compared with the control group. Chrysin-NPs increased apoptosis and suppressed the expression of tumor progression-related factors in tumor tissues.

Conclusion: Intravenously injectable chrysin-NPs would improve the obstacle of chrysin. Thus, chrysin-NPs could be a good candidate of chemotherapeutic agents for TNBC.

Biography

Joohee Jung is the Chair of the Department of Pharmaceutical Sciences and Associate Professor at College of Pharmacy, Duksung Women's University, Republic of Korea. She has completed her PhD in Pharmaceutical Sciences from Osaka University, Japan in 2004 and Postdoctoral studies from the Institute of Scientific and Industrial Research, Osaka University, Japan during 2004-2007 and Institute for Innovative Cancer Research, Asan Medical Center, Republic of Korea during 2007-2012. She works on assessment of efficacy and toxicity for the improvement of chemotherapy.

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