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Cryptotanshinone reduces the level of *topoisomerase 2* in human prostate cancer cells and affects the cytotoxicity of anticancer drugs

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DNA topoisomerase 2, which is ubiquitously existed in eukaryotic cells, is an essential nuclear enzyme for cell survival by controlling DNA topology and chromatid separation. This enzyme has been validated as a target for anticancer agent screening. It can be poisoned by common chemotherapeutics , such as etoposide and doxorubicin, which lead to the accumulation of cytotoxic enzyme-linked DNA double stranded breaks. However, recent reports have recommended that the topoisomerase 2a isozyme is predominantly responsible for the carcinogenic side effect associated with etoposide and doxorubicin chemotherapy. Therefore, we nned to find a promising topoisomerase 2-targeint anticancer agent that overcome the carcinogenic side effects. Cryptotanshinone is recently reported to have obvious anticancer activities against diverse cancer cells. In the present study, we demonstrated that cryptotanshinone markedly decrease the steady-state mRNA level of topoisomerase 2a, which led to a decrease the protein and activity levels of this enzyme. Furthermore, cryptotanshinone exhibited dramatic *in vitro* and *in vivo* antitumor activity with low toxicity to normal tissues. Taken together, our work supports the development of cryptotanshinone as a promising candidate for treating cancer by targeting topoisomerase 2a.

Biography

Minyoung Lee has completed his PhD from college of medicine, Kyunghee University. She is the senior researcher of Korea institue of Radiological and Medical Sciences (KIRAMS). She has published more than 25 papers in reputed journals until 2000.

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