Study on the Ability of Binding and Killing Several Cancer Cell Lines of Antinuclear Antibody

Nguyen, Chau

Hoang, Chinh

Antinuclear Antibody (ANA) in Systemic Erythematosus Autoimmune Disease patients was assumed to be capable of binding and killing cancer cells. This project has been carried out to experimentally and precisely evaluate this ability of ANA in vitro. The preparation of radio immune conjugation 131I-ANA was initially performed to use 131I as an indicator to record image and measure results. We used chloramine T oxidant and electrophilic substitution reaction to attach 131I on ANA. The 131I-ANA conjugation was then purified by Gel Sephadex Chromatography and radiochemical purity tested by TecControl Chromatography. Subsequently, to evaluate the binding ability of ANA on human prostate cancer cell lines PC3, human small cell lung cancer H211, glioblastoma/astrocytoma cell lines U87 and control with fibroblast, we incubated those cells with 131I-ANA, followed by centrifuging and radioactivity measurement to calculate binding efficiency. To determine the percentage of cancer apoptotic cells induced by ANA, we cultured PC3 cells with and without additional 131I-ANA. The 131I-ANA conjugation has passed criteria of radiopharmaceuticals, in which radiochemical purity was 98.7% ± 0.7%. The specific binding efficiencies of ANA were respectively 77.11%, 58.50% and 64.05% on PC3, H211 and U87 cancer cell lines, while a lower figure of 23.4% was found on fibroblast cells. After 48 and 72 hours, the ratios of apoptotic cells were 19.43 ± 2.96% and 29.77 ± 4.95% in additional 131I-ANA culturing environment and 4.53 ± 1.1% and 6.0 ± 1.2% in control group. In conclusion, ANA is able to bind specifically on PC3, H211 and U87 cancer cell lines, as well as killing PC3 cells in culturing. These results have proved that ANA is a promising innovative agent for targeted cancer therapy.

Awards Won:

Third Award of $1,000