

Anticancer activities of anti-membrane antibodies against colon carcinoma cells undergoing chemotherapy

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ABSTRACT

Aims and background. Chemotherapy combined with target therapy using antibodies against tumor cell membrane antigens may greatly increase the survival of cancer patients. Similar to autoantigens in autoimmunity diseases, certain membrane components may be more heterogeneous and create new determinants of antigens or haptens after chemotherapy. The aim of the current study was to prepare anti-membrane antibodies against colon carcinoma cells undergoing chemotherapy and examine their anticancer activities *in vitro*.

Methods. After the colon carcinoma cells were treated by mimic chemotherapy, the synthesized poly-lysine was used as a carrier to link the membrane antigen or hapten with the covalent bond of carbodiimide bridging. It was affirmed by fluorescence-activated cell sorting under laser confocal microscopy that the vaccine with poly-lysine membrane-linked cells with a covalent bond was successfully engineered. Then, the cognate mice were vaccinated, and the anti-membrane polyclonal antibodies were prepared and validated for their activities.

Results. The anti-membrane polyclonal antibodies were effectively induced and prepared. *Folliculus lymphaticus* were found significantly increased in vaccinated mice, and B lymphocyte proliferation was also intensively stimulated by vaccine and generating antibodies. The polyclonal antibodies, exhibiting minimal endotoxicity, displayed intensive sensitivity, high affinity and strong specificity. They also elicited apoptosis and necrosis for wild type colon carcinoma cells and offered synergistic effect to repress the chemotherapy-resistant tumor cells.

Conclusions. The poly-lysine-linked membrane for colon carcinoma cells undergoing chemotherapy could produce the anti-membrane polyclonal antibodies (promising as novel antibody molecules for target therapy) and generate an effective immune attack on the surviving cancer cells.

Key words: anticancer immune, anti-membrane antibody, colon carcinoma, poly-lysine, target therapy.

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