

Possibility of novel therapy aimed at antitumor effect of supramolecular substance

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The first, we are investigating the influence of [2] Catenane and Rotaxane, a novel supramolecule substances composed on the proliferation of cultured mice cancer cells using delivery way of electroporation and sonoporation through the cell membrane. Electroporation carried out in a cuvette with a DC pulse (30V, 10pluses), and sonoporation did in the condition (40W, 30sec). We are measured by MTT assay in sample from mice cancer cells. The cell counts after culturing was inversely proportional to the Catenane and Rotaxane concentration. Inhibiting effects on mouse B 16 and Colon 26 cell proliferation were confirmed for the Catenane and Rotaxane. The inhibitory effect was confirmed in the Catenane concentration of 250nM-2.5 μ M and Rotaxane concentration 10nM-100nM, 5-FU 1mM. The cell counts Catenane 2.5 μ M and Rotaxane 100nM was reduced to 1/3 that of the Catenane-free sample and Rotaxane-free sample, respectively. These results suggest that Catenane and Rotaxane may have the usefulness as a anticancer drug.

Furthermore, we investigated the effects of the Catenane and Rotaxane on major apoptotic mechanism in mitochondria pathway for mouse B 16 and Colon 26 cell types. We measured by RT-PCR the content of β -actin, Bax, Bad, Bcl-2 and Caspase-3 mRNA from mice cancer cells. The inhibitory effects of Rotaxane on the Caspase-3 activity of mRNA was similar to that of 5-FU, and that of Catenane was significantly lower than that of 5-FU. These results suggest that the inhibitory effect of Rotaxane on mice cancer cells may be based on apoptotic cell death, and Catenane mechanism other than the mitochondria pathway.