

*O*₄-benzo[*c*]phenanthridine アルカロイドの HCT-116 と HL-60 細胞に対する細胞増殖抑制作用について

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Antiproliferative activity of *O*₄-benzo[*c*]phenanthridine alkaloids against HCT-116 and HL-60 tumor cells

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ABSTRACT: The *O*₄-benzo[*c*]phenanthridine alkaloids exhibit potent antiproliferative activity against cancer cells, which is derived from their ability to inhibit of topoisomerase I and II. It has been reported that in the alkaloids a cationic quaternary ammonium atom, which results in resonance effects between ring A and B, is necessary for increased antiproliferative activity. These findings indicate the role of their substituents at ring A on inhibition of tumor cell proliferation. In the present study, we systematically assessed the cytotoxic activities of naturally occurring alkaloids and their derivatives containing various ring A substituents against two tumor cell lines, HCT-116 colon tumor cells and HL-60 promyelocytic leukemia cells. Among the cationic iminium alkaloids, which displayed more potent activity than the corresponding neutral derivatives, and the 7,8-oxygenated benzo[*c*]phenanthridine alkaloids, chelerythrine and NK109, exhibited stronger antiproliferative activity than the 8,9- and 9,10-oxygenated alkaloids. The activity of cationic iminium alkaloids could be correlated with the bond lengths of their ring A substituents and the electrostatic potentials of their ammonium molecules by DFT calculation.

抄録 この論文は、HCT-116 colon tumor cells と HL-60 promyelocytic leukemia cells の2つのヒトがん細胞に対して、benzo[*c*]phenanthridine アルカロイドとそのA環に様々な置換基をもつ誘導体の細胞増殖抑制活性評価試験を実施した内容である。

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