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Effects of Diethylstilbestrol and Its Methyl Ethers on Aneuploidy Induction and Microtubule Distribution in Chinese Hamster V79 Cells*

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We previously reported that diethylstilbestrol (DES) and its derivatives inhibit the *in vitro* polymerization of microtubule proteins isolated from porcine brain (Sato et al., J. Biochem. 1987). We found that the presence of the free hydroxy group of DES was indispensable for the inhibition of microtubule assembly.

In the present investigation, this structure-activity relationship was confirmed by the effects of DES and its methyl ethers on chromosome number and the cellular microtubule architecture of Chinese hamster V79 cells, revealed by fluorescent anti-tubulin antibody.

DES induced tetra- and octaploidy and DES monomethyl ether induced only tetraploidy at a much slower rate, whereas DES dimethyl ether was found to be completely inactive. Furthermore, DES was more active than its monomethyl ether in disturbing microtubule formation within cells.

These results support the initial assumption that polyploidy is largely a consequence of the disturbed assembly of microtubules.

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