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Inhibition of Microtubule Polymerization by Synthetic Estrogens: Formation of a Ribbon Structure*

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Dienestrol, meso-hexestrol, and dl-hexestrol, synthetic nonsteroidal estrogens, were shown to be inhibitors of microtubule assembly *in vitro* using microtubule proteins isolated from porcine brains. The order of activity of the synthetic estrogens as inhibitors of microtubule assembly is : dienestrol > diethylstilbestrol > meso-hexestrol > dl-hexestrol > isodienestrol. The activity of dienestrol as an inhibitor was almost in the same order with that of (+)-griseofulvin as determined by turbidity measurement. Electron microscopic observation revealed that twisted ribbon structures are formed from microtubule proteins in the presence of some synthetic estrogens (dienestrol, meso-hexestrol, and dl-hexestrol).

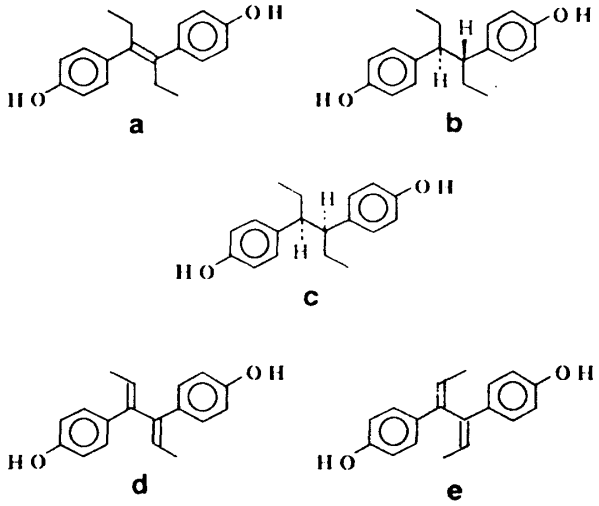

Fig. 1. Structures of synthetic estrogens : a, diethylstilbestrol ; b, meso-hexestrol ; c, *dl*-hexestrol (3S, 4S isomer) ; d, dienestrol ; and e, isodienestrol.

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