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Effects of Synthetic Estrogens, (+)-, (−)-, dl- and meso-Hexestrol Stereoisomers on Microtubule Assembly

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We previously reported on the inhibition of microtubule polymerization and the formation of ribbon structures by synthetic estrogens. The present investigation aimed to analyze these effects in vitro on stereochemical point of view, using hexestrol isomers ((+)-hexestrol, (−)-hexestrol and meso-hexestrol) and dl-hexestrol. Among hexestrols, dl-hexestrol showed the highest activity in ribbon formation from microtubule proteins at 100 μM.

On the other hand, meso-hexestrol was distinguished from others by inhibition of microtubule assembly and formation of a large amount of aggregates from purified tubulin in the presence of $MgCl_2$ and dimethyl sulfoxide. These results were discussed with physico-chemical properties of hexestrols, e.g. absolute configurations as well as circular dichroism spectra and solid state carbon-13 nuclear magnetic resonance spectra.

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