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Formation of Free Radicals and Active Oxygen Species from Diethylstilbestrol and Its Derivatives

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Diethylstilbestrol (DES), an estrogen analogue, was converted into a free radical in alkaline dimethyl sulfoxide as well as in an H_2O_2/peroxidase system. The presence of the hydroxyl group of the DES molecule was essential to free radical formation. Indenestrol A (**IA**), a microsomal metabolite of DES, showed a paramagnetic property without enzymatic activation. The electron spin resonance spectrum of **IA** seemingly corresponded to that of the enzymatically formed DES radical. In an NADH peroxidase sysem, DES induced concomitant production of active oxygen species, which were also produced by **IA**. Related compounds of **IA** were also examined to compare with DES and **IA**. The significance of the free radical is discussed in relation to the process of carcinogenesis by DES.

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