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JOURNAL ARTICLE

Specific inhibition of the testicular mitochondrial respiratory chain in vitro by gossypol

I. Kim and D. P. Waller

Optically inactive gossypol is an effective male antifertility agent in several mammalian species, while optically active (+)-gossypol has no antifertility effect in the rat and hamster. Recently, it was suggested that the mitochondria of spermatogenic cells may be a subcellular target of gossypol. We are reporting the effects of optically inactive gossypol and (+)-gossypol on the respiratory chain of mitochondria isolated from the testes and liver of rats and hamsters. The mitochondria were incubated with the test compounds and difference spectra were recorded. Complete inhibition of the testicular mitochondrial respiratory chain was observed at a concentration of approximately 75 microM. In contrast, no inhibition of the liver mitochondrial respiratory chain was observed with the test compounds at concentrations as high as 300 microM. These results demonstrate selective inhibition of the testicular mitochondrial respiratory chain by gossypol isomers.

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