Anti-mutagenicity activity of dehydroepiandrosterone


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OBJECTIVE: The chemopreventive activity and mechanism of dehydroepiandrosterone (DHEA) were studied. METHODS: Model of 7,12-dimethylbenz (alpha) anthracene (DMBA) induced breast carcinoma in Sprague-Dawley rats, ultra-violet (UV)-induced DNA damage and Salmonella mutation assay were used. RESULTS: In DMBA-induced rat mammary tumor model, the rats were orally given daily DHEA for 2 weeks before DMBA and continued for 10 weeks after DMBA administration. The results showed significant inhibition of tumor development by DHEA. The incidence of mammary carcinoma also decreased significantly on daily dose of oral 25 mg/kg DHEA with the mean tumor volume per rat also remarkably reduced by 92%. Moreover, 25 mg/kg DHEA treatment could significantly increase the carcinoma latency for about 3.5 weeks as compared with the control. Using polymerase chain reaction (PCR) assay, in vitro 10(-9) mol/L DHEA showed significant inhibitory effect on UV-induced DNA damage by 90%. In Ames test, DHEA was found to decrease DMBA and benzo (alpha) pyrene-induced TA98 and TA100 His(+) revertants markedly and the number of Salmonella clones were significantly reduced by 53.2% and 73.0% on dose of 5 microgram DHEA/plate. It was also shown that in vitro 10(-7) mol/L DHEA could also effectively inhibit the G-6-PDH activity, which might play an important role in its chemoprophylaxis activities. CONCLUSION: The results strongly prove that DHEA is a potent cancer chemoprophylaxis agent, which exhibits inhibitory potential on mutation and chemical carcinogen in vivo and in vitro.

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