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Ddt Increase Aromatase Gene Expression and Activity in Leydig Cells

Kyung Jin Lee, Ji Young Kim, Dong Weon Shin, Young Rhan Cho, Kyung Sik Jung, Ho
Jin You, Hye Gwang Jeong
*Department of Pharmacy, College of Pharmacy, Research Center for Proteineous Materials,
Chosun University, Kwangju, South Korea*

Dichlorodiphenyltrichloroethane (DDT) is a widespread environmental pollutant. Earlier reports have demonstrated that DDT is an endocrine-active compound capable of affecting early-stage sexual differentiation in male rats. Experiments based on receptor binding affinity and receptor-mediated transcriptional activation have identified DDE as an androgen receptor antagonist. Other effects of DDT include modulation of the expression and activity of cytochrome P450 (CYP) enzymes in treated male rats. In this study, we investigated the effect of DDT on aromatase expression and investigated its molecular mechanism in testicular leydig cell, R2C. We investigated that whether testicular aromatase was responsive to DDT treatment and found that hepatic aromatase protein in adult male rats was greatly increased after seven daily oral treatments of DDT. This induction was seen in immunoblot of testis. We investigated that the effects of DDT on aromatase gene expression and activity in R2C cell and male rat by RT-PCR and radio immunoassay (RIA). As the results, DDT was found to increase aromatase activity in R2C cell and male rat in a dose dependent manner. The current study suggests the possibility that DDT might act as a modulator aromatase gene transcription.

Keyword : dichlorodiphenyltrichloroethane, aromatase, leydig cell