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CURCUMIN DOWN REGULATES STEROIDOGENESIS IN LEYDIG CELLS VIA RESTRICTION OF PROTEIN KINASE A ACTIVITY

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Curcumin administration reduces fertility and the serum testosterone level in male animals. In bovine adrenal zona fasciculata cells, curcumin treatment inhibited cortisol production stimulated by adrenocorticotrophic hormone or a membrane-permeable cyclic adenosine monophosphate analog by suppressing the expression levels of steroid acute regulatory protein (StAR) and *CYP11A1*, which are critical for steroidogenesis. We investigated the effect of curcumin in testosterone production. In this study, both primary mouse Leydig cells and the MA-10 cell line were used. Enzyme immunoassay results showed that curcumin suppressed ovine luteinizing hormone-supported testosterone production in Leydig cells and 8-bromo-cyclic adenosine monophosphate-supported progesterone production in MA-10 cells. Fluo-3 AM staining results revealed that curcumin suppressed steroidogenesis without altering long term intracellular

calcium level. Further results suggest the inhibitory effect is due to inhibition of protein kinase A (PKA) activity. Consequently, the expression of StAR and *Cyp11A1* were suppressed by attenuating the transcription factors Fos expression levels. In general, curcumin inhibited transcription factor expression under cAMP stimulation, and suppressed PKA activity and StAR and *CYP11A1* expression which obstructed steroidogenesis in Leydig cells.

Biography

Chih Hsien Chiu pursued PhD specializing in Animal Physiology, Steroidogenesis and Molecular Endocrinology in the Department of Animal Science and Technology of National Taiwan University, Taiwan. Presently, he is a Professor in the same department at the same university. He continues his research work at Academia Sinica in Taiwan.

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