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Degree Objective: Ph.D. Endocrinology and Reproductive Physiology

Background: Bachelor of Medicine in Clinical Medicine, Jiangxi Medical College (Medical College of Nanchang University), Nanchang, Jiangxi, China

Current Research Project:

The aryl hydrocarbon receptor (AhR) is a ligand-activated transcription factor, mediating many biological, carcinogenic, and toxic effects of its ligands. However, if the AhR mediates growth of a variety of cancers, particularly in human ovarian cancer, remains controversy. Moreover, prenatal exposure of many species (e.g., mice, rat, rabbit, monkey, and also possibly human) to dioxin could cause fetotoxicity, leading to decreased litter size and increased prenatal mortality. Knockout of the AhR gene in mice also have difficulties in establishing implantation and maintaining pregnancy and have decreased litter size and increased neonatal death, indicating important roles of the AhR in pregnancy, fetal growth and neonatal survival. One of classic ligands for the AhR is 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), an environmental carcinogen. 2-(1'H-indole-3'-carbonyl)-thiazole-4-carboxylic acid methyl ester (ITE), isolated from porcine lung tissues, is an endogenous AhR ligand. Given its naturally producing nature and specific binding to the AhR, ITE is believed to have a much lower toxicity as compared with the extreme deleterious effects of dioxin. In this study we will investigate the role of the AhR in mediating growth of human ovary cancer cells and human umbilical cord endothelial cells induced by endogenous (ITE) and exogenous (TCDD) AhR ligands. We will first determine if ITE and TCDD regulate growth of human ovarian tumor cells via activation of the AhR using both in vitro and in vivo mouse Xenograft model. We will also investigate roles of the AhR in mediating growth and vasodilatory actions (nitric oxide production/eNOS synthesis and activaotin) in human umbilical cord vein (HUVE) and artery (HUAE) endothelial cells as well as its underlying cellular and molecular mechanisms. These data will advance our understanding of roles of the AhR in mediating growth of human ovarian cancer and human fetal tissues, which is potentially used for future therapeutic intervention for this deadly human cancer and manipulation of fetal vascular growth and function, ultimately for generating more healthy offspring.

Honors:

Larry Ewing Memorial Travel Fund for Society for the Study of Reproduction Annual Meeting 2010.

Grants Received:

Publications:

National Presentations:



Li Y, Wang K, Jiang YZ, Magness RR, Zheng J. 2010. Activation of Aryl Hydrocarbon Receptor Inhibits Proliferation of Human Umbilical Vein Endothelial Cells. *Biol Reprod* (1 Suppl.): Abst. # Biol Reprod (1 Suppl.): Abst. #449.

Other Presentations:

Li Y, Wang K, Jiang YZ, Magness RR, Zheng J. 2010 Activation of Aryl Hydrocarbon Receptor Inhibits Proliferation of Human Umbilical Vein Endothelial Cells 16th annual UW cardiovascular Research Center Scientific Poster Fair.

ERP Service: 2011 ERP Symposium Committee Member