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METABOLIC PROFILING IN RADIAL GLIAL CELLS: A NOVEL APPROACH TO STUDY REGULATION BY ENDOCRINE DISRUPTORS AND SEX STEROIDS

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Radial glial cells (RGCs) in teleost fish produce aromatase B (AroB), the key enzyme that converts testosterone (T) into 17β-estradiol (E2). These cells are regulated by a number of neuropeptides and hormones and are potentially affected by environmental contaminants. The objectives of this study were to determine the effect of the environmental contaminant 17alpha-ethinylestradiol (EE2) on mitochondrial bioenergetics in a zebrafish primary radial glial cell culture. These cells have estrogen receptors and respond to estrogen feedback to modulate steroid production. Radial glial cells were passaged four times until cultures yielded > 95% purity. Cells were treated for 24 hours with EE2 in media (1, 10, and 100 nM). RGCs (n=5 replicates/group) were then seeded at 5.0x10^4 cells/well and assessed using an XFe24 Flux Analyzer. Mitochondrial bioenergetics were quantified by subtracting respiration rates at times before and after addition of electron transport chain inhibitors that included oligomycin, FCCP, and antimycin (i.e. mitochondrial stress test). EE2 did not significantly affect basal respiration of mitochondria, ATP production, proton leak, maximum respiratory capacity, spare capacity, or non-mitochondrial function. These preliminary data suggest that EE2 does not significantly affect the metabolic capacity of RGCs at the time point and doses examined. Additional experiments with hormones and endocrine disruptors are underway to determine if physiologically relevant treatments alter mitochondrial profiles. Here we optimize a new assay for investigating endocrine disruptors and hormones on mitochondrial bioenergetics for relevant cell types related to reproduction *in vitro*.

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