Respirometry Outcomes in a 7 Days Post-Fertilization Danio Rerio Fed Different Dietary Conditions.

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More than a third of the adults in the Appalachia are affected by obesity, which is associated with diets that are high in fats and cholesterol as well as the development of many diseases such as diabetes, hypertension and cardiovascular diseases. These diets lead to chronic inflammation and cellular damage from production of free radicals such as Reactive Oxygen Species (ROS). We compared the respirometry outcomes in a 7 days post-fertilization zebrafish (*Danio rerio*) larvae after different diet conditions. Larvae were either fed nothing at all, a low fat diet (LFD), a high fat diet (HFD), or a HFD plus a drug that mitigates oxidative stress (Anethole Trithione and mito-TEMPO). We expected that the HFD would cause the mitochondria to be put under more stress due to oxidative phosphorylation of lipids and would decrease in the larvae treated with the drugs. Respirometry was obtained using the XFe24 Extracellular Flux Analyzer (Agilent Technologies) and a modified Cell Mito Stress Test. We found basal respiration is higher in the HFD and lower in the other two treatment diets, indicating that high fat diets do produce more oxidative stress in mitochondria, and the drugs tested are able to successfully mitigate it. The analysis of drug interaction readings is in progress. In the future, we will test other drugs that can affect mitochondrial metabolism (i.e. Curcumin, Pitastatin, Mdivi-1 and PPPA).

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