

P18. THE ZEBRAFISH AS A MODEL TO STUDY THE ROLE OF 3,5-DIIODO-L-THYRONINE AT PERIPHERAL AND CENTRAL LEVEL

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The 3,5-diiodo-L-thyronine (3,5-T2) is an endogenous metabolite of thyroid hormones which can improve adiposity and associated disorders. The 3,5-T2 administration to rodents feeding a high-fat diet (HFD) prevents body weight increase and reverts the HFD-associated expression pattern of proinflammatory factors. Given that several brain and gut functions and immune genes are conserved between zebrafish (*Danio rerio*) and mammals, the obese adult zebrafish has been recently used as an experimental model, with pathophysiological pathways similar to mammalian obesity, to investigate fundamental processes underlying central and peripheral inflammation. Here, we aimed to determine, for the first time, whether 3,5-T2 regulates the gut morphology and the central and peripheral inflammation in the Diet Induced Obesity (DIO) zebrafish model. For this purpose, we supplemented the fish water with two different concentration of 3,5-T2, 1 nM and 10 nM. The DIO adult zebrafish showed an increase of intestinal inflammation confirmed by the damaged intestinal barrier and the increase of goblet cells, accompanied by the over-expression of several inflammatory markers. Interestingly, 3,5-T2 treatment increased the impairment of intestine morphology, as well as the expression of proinflammatory factors in the gut of both control and DIO adult zebrafish. The alterations found in the intestine were accompanied by brain inflammation as indicated by the increase of microglia activation. Our findings reveal the zebrafish as animal model to study the aversive effect of 3,5-T2, both at peripheral and central level.

