Investigate optical redox ratio and macrophage infiltration of adipose tissue in high fat diet induced diabetic mice

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ABSTRACT
Type 2 Diabetes mellitus (T2DM) has high correlation with obesity. There are growing evidences show that the macrophage infiltration (MI) of adipose tissue (AT) contribute to insulin resistance [1]. AT have been seen as a regulating center of energy metabolism and storage. Although our past work did not find significant variation of optical redox ratio (RR) in the patients with DM [2], in this article, we want to furthermore precisely investigate the evolution of RR and MI of AT in development of T2DM in mice. For studying MI, we employed LysM-eGFP mice in which monocytes, macrophages and neutrophils abundantly express GFP [3]. The mice were induced T2DM through high fat diet. The ATs biopsy were obtained from ear, leg, epididymis, pericardiac, abdomen and dorsum, then used multi-photon (MP) fluorescence microscope to obtain metabolic auto-fluorescence image (NADH, FAD) with macrophages (EGFP) and collagen (Second hormonic generation, SHG). RR were calculated through intensity ratio of NADH/FAD, while MI were counted by pixels. The preliminary result showed that the RR and MI both increase in T2DM mice.

REFERENCE