



The Effects of Chronic Stress on Brown Adipose Tissue Remodeling and Metabolism

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ABSTRACT:

Adipose tissue has been found to exist in two predominant forms, white and brown. White adipose tissue (WAT) is the body's conventional storage organ, and brown adipose tissue (BAT) is responsible for non-shivering thermogenesis which allows mammals to produce heat and regulate body temperature. Studies examining BAT and its role in whole-body metabolism have found that active brown adipose tissue utilizes glucose and circulating fatty acids which can lead to improved metabolic outcomes. While the beiging/browning of WAT is a growing area of interest, the possibility of the BAT depot to "whiten" and store more triglycerides rather than produce heat has metabolic and health implications. Currently, there are limited studies that examine the effects of chronic stress and its ability to induce a white-like phenotype in the BAT depot. This research aims to determine how stress hormones can affect the whitening process of BAT through *in vivo* methods. Using a mouse model, the effect of the murine stress hormone corticosterone on BAT was investigated for 1) its impact on indicators of glucose tolerance and insulin resistance, and 2) the expression of uncoupling protein 1 (UCP1), which is integral to the non-shivering thermogenesis pathway. This study will aid our understanding of the role of stress hormones on BAT remodeling.