EVALUATION OF CHOLINERGIC ANTI-INFLAMMATORY PATHWAY IN THE HYPOTHALAMUS AND WHITE ADIPOSE TISSUE OF OFFSPRING MICE WITH OBESITY INDUCED BY MATERNAL CONSUMPTION OF HIGH FAT DIET


Results and Discussion

Methodology: After delivery the litter size (SC offspring, SC-O; HFD offspring, HFD-O 28 days-old) was stimulated with saline or nicotine (i.c.v. injection). Hypothalamus and WAT were collected to immunofluorescence and WB analyze. Results: α7nAChR expression in HFD-O mice was reduced in WAT and hypothalamus by WB (Fig. 1A and 1B) and immunofluorescence (Fig. 1C and 1D) compared to SC-O mice. Nicotine ICV injection increased α7nAChR expression in SC-O mice, but did not alter α7nAChR expression in HFD-O mice ((Fig. 1A and 1B). Discussion: Reduced expression of α7AchR can allow proinflammatory cytokines continue to be expressed. The diminished expression of α7nAChR in hypothalamus can contribute to impair hormonal signaling causing the imbalance of energy homeostasis and leading to weight gain and predisposition to obesity.

Figure 1. Western blot analysis of α7AchR. A. α7AchR in white adipose tissue B. α7AchR in hypothalamus.

Figure 2. Immunofluorescence analysis of α7AchR expression in white adipose tissue and hypothalamus. DAPI (blue) and α7AchR (green) in (C) adipose tissue and (D) hypothalamus of offspring from mothers fed high fat diet (HFD-O) and stand chow (SC-O) at 28 day-old. (*p< 0,05, ** p< 0,01)

Conclusion

Maternal HFD consumption impairs α7nAChR expression and modulates cholinergic anti-inflammatory signaling in hypothalamus and WAT.

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