

MOTS-c and its K14Q variant demonstrate significant lipid-lowering and weight-reducing effects in obese mice

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A 1382A>C substitution in the MOTS-c gene results in a K14Q amino acid replacement. Research on the MOTS-c K14Q variant is still limited, and its role in blood lipid metabolism remains unclear. In this study, we investigated the effects of MOTS-c and its K14Q variant on obesity. A diet-induced obesity mouse model was established and treated with injections of either MOTS-c or the K14Q variant. Subsequent analyses examined AMPK (*PRKAA1*) expression, changes in body weight, and serum lipid profiles, including total cholesterol (TC), triglycerides (TG), and free fatty acids (FFA). Both MOTS-c and the K14Q variant activated AMPK expression and reduced body weight as well as levels of TC, TG, and FFA. However, MOTS-c exhibited a stronger effect on reducing TC and TG, whereas the K14Q variant showed a greater impact on lowering FFA. In conclusion, MOTS-c and its K14Q variant both exert lipid-lowering effects, but their differential impacts on TC, TG, and FFA suggest distinct regulatory roles in blood lipid metabolism.

Keywords: MOTS-c, MOTS-c K14Q, diet-induced obesity mice, total cholesterol, triglycerides, free fatty acids