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Advances in Research on Exercise-Mediated miRNAs Regulating White Fat Browning

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Objective In this paper, we reviewed the positive and negative regulation of miRNAs on white fat browning and the effects of exercise on miRNAs and white fat browning, and explored the mechanism and physiological significance of miRNAs on white fat browning, and prospecting white fat browning. Prospects provide experimental researchers with new research ideas and provide potential methods for the prevention and treatment of obesity and metabolic related diseases.

Methods Through the literature data method, 110 articles were reviewed. Finally, 75 papers (including 69 English papers) were used to analyze the research progress of exercise-mediated miRNAs regulating white fat browning, and provide new models for experimenters. Research ideas.

Results The analysis found that only a small number of miRNAs have a mechanism of action on white fat browning. In the future, the mechanism of action of other miRNAs on white fat browning should be further studied. The research on the effects of exercise on miRNAs is still in its infancy. There are few studies on the effects of exercise on white fat browning, and there is controversy. In the future, it is necessary to clarify the effects of different exercise modes on the regulation of white fat browning by miRNAs. Mechanism and physiological significance. In summary, miRNAs are closely related to the process of white fat browning, miRNAs can regulate the transcription of brown genes, and miRNAs have positive and negative regulation of white fat browning. However, the mechanism of action of only a small number of miRNAs on white fat browning has been elucidated (as shown in Figure 1), and the mechanism of action of other miRNAs on white fat browning should be further studied in the future. It is worth noting that the current studies on the browning of white fat by miRNAs have only been verified in animal experiments and human cell culture, and the exact mechanism of action in humans remains to be further verified. In terms of disease, RNA-based therapy has entered clinical trials, and further exploration of the function of miRNAs in white and brown adipose tissue will be a new treatment to help humans treat obesity and its subsequent complications. In addition, research on the effects of exercise on miRNAs is still in its infancy. There are few studies on the effects of exercise on browning of white fat, and there is controversy. In the future, it is necessary to clarify more different ways to induce miRNAs to regulate white fat browning. The mechanism of action and physiological significance make the research system in this field more perfect, and find as many miRNAs as possible to effectively intervene in obesity, promote brown fat production and white fat browning, and prevent and treat human obesity and metabolic abnormal diseases.

Conclusions In summary, miRNAs are closely related to the process of white fat browning, miRNAs can regulate the transcription of brown genes, and miRNAs have positive and negative regulation of white fat browning. However, the mechanism of action of only a small number of miRNAs on white fat browning has been elucidated (as shown in Figure 1), and the mechanism of action of other miRNAs on white fat browning should be further studied in the future. It is worth noting that the current studies on the browning of white fat by miRNAs have only been verified in animal experiments and human cell culture, and the exact mechanism of action in humans remains to be further verified. In terms of disease, RNA-based therapy has entered clinical trials, and further exploration of the function of miRNAs in white and brown adipose tissue will be a new treatment to help humans treat obesity and its subsequent complications. In addition, research on the effects of

exercise on miRNAs is still in its infancy. There are few studies on the effects of exercise on browning of white fat, and there is controversy. In the future, it is necessary to clarify more different ways to induce miRNAs to regulate white fat browning. The mechanism of action and physiological significance make the research system in this field more perfect, and find as many miRNAs as possible to effectively intervene in obesity, promote brown fat production and white fat browning, and prevent and treat human obesity and metabolic abnormal diseases.