



Targeting of miR-432 to myozenin1 to regulate myoblast proliferation and differentiation

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ABSTRACT. MicroRNAs (miRNAs) play important roles in the development and biochemical functions of skeletal muscles. However, targeting of miRNAs to structural genes involved in Z-discs have not been investigated. Here, we describe a highly expressed miRNA, miR-432, in pig embryonic skeletal muscle, which appeared to target myozenin1 (MYOZ1), a protein involved in the muscular sarcomere microstructure. Our results showed that miR-432 is involved in muscle development in the developing pig. In addition, it promoted differentiation of the C2C12 myoblast cell line into myotubes. We also demonstrated that inhibition of miR-432 reduced proliferation of C2C12

cells, suggesting that miR-432 is involved in regulation of myoblast proliferation. Moreover, molecular markers of muscle differentiation and fiber type (Myh7/ slow and Myh4/ fast IIB) showed that miR-432 reduced the differentiation rate of C2C12 cells. These results provide insights into the potential functions of miR-432 as well as its proposed target, MYOZ1, during muscle development. This may lead to applications for further improvements in porcine muscle growth, and may enhance our understanding of complex inherited human muscle disorders.

Key words: Muscle differentiation; MiR-432; MYOZ1