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(The role of SIRT1 in skeletal muscle function and aging)

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Sirtuin 1 (Sirt1) is a gene associated with aging and longevity. In skeletal muscle, it was reported that Sirt1 was associated with mitochondrial biogenesis and fatty acid oxidation; however, the function of the Sirt1 pathway in sarcopenia remains poorly understood.
In this study, we generated a mouse model (fmSirt1KO mice) in which the Sirt1 was selectively deleted in fast-twitch muscle fibers without affecting other organs. fmSirt1KO mice were capable of reproduction and grew up normally as well as the control mice. In young male mice, the deletion caused no significant difference in muscle mass, strength, and fatigue resistance. However, with aging, fmSirt1KO mice showed lower fatigue resistance compared with the control mice. The mRNA levels of genes related to muscle differentiation, including MyoD, was decreased in fmSirt1KO mice, indicating that Sirt1 affected changes in muscle quality with aging. For further study, we are to elucidate the pathogenic mechanism of Sirt1 and sarcopenia as well as muscle-bone linkage, using this mouse model.