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Content

DETERMINATION OF MUSCLE FIBER TYPES EXPRESSING ANKRD2

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Introduction: Ankyrin Repeat Domain 2 (ANKRD2) is expressed in skeletal muscle, where plays a role in muscle development, differentiation and adaptation to stress. Human skeletal muscle consists of three major fiber types: type 1 (slow-twitch, oxidative), type 2A (fast-twitch, oxidative) and type 2X (fast-twitch, glycolytic). ANKRD2 is reported to be primarily expressed in type 1 myofibers. However, recent findings on human single myofibers and our study of chicken muscles have shown that this protein may also be expressed in type 2A fibers. Hence, our objective was to examine whether ANKRD2 is present in human fast, type 2A muscle fibers using immunohistochemistry.

Methods: Samples of large leg muscles *soleus*, *gastrocnemius*, *vastus intermedius* and *vastus lateralis* were obtained from human cadaveric tissue. Serial cryosections were independently stained with anti-ANKRD2 and antibodies for different myosin heavy chain isoforms (6H1 for type 2X, BF35 for type 1 and 2A, anti-MHCs for type 1 and anti-MHCf for type 2A and 2X fibers). Immunostained tissues were analyzed by fluorescent microscopy.

Results: In addition to slow, type 1, ANKRD2 was found expressed in fast, type 2A myofibers, which both have oxidative metabolism. Further, we did not observe ANDRD2 expression in glycolytic, type 2X myiofibers. This pattern of ANKRD2 expression was consistent across all examined muscles.

Conclusion: Our results implicate that the regulatory mechanism of ANKRD2 expression in human skeletal muscle is associated with oxidative metabolism, rather than muscle contraction speed.

Key words: ANKRD2; muscle fibers types; protein expression; immunohistochemistry

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