

Medicine & Science in Sports & Exercise

Issue: Volume 33(5) Supplement 1, May 2001, p S230

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Publication Type: [F19D FREE COMMUNICATION/SLIDE MOLECULAR AND GENETIC ASPECTS OF PERFORMANCE]

ISSN: 0195-9131

Accession: 00005768-200105001-01295

[F19D FREE COMMUNICATION/SLIDE MOLECULAR AND GENETIC ASPECTS OF PERFORMANCE]

TRANSFORMING GROWTH FACTOR-[beta] IN SKELETAL MUSCLE STRAIN INJURYSmith, C A.¹; Stauber, FACSM, W T.¹; Alway, FACSM, S E.¹; Miller, G R.¹**Author Information**¹West Virginia University, Morgantown, WV

The presence of transforming growth factor-[beta] (TGF-[beta]) in skeletal muscle has been reported in various muscle disease. In this study, we assess the presence of transforming growth factor-[beta] in strain-induced muscle injury. Muscle strains were produced by manually stretching (50 repetitions) an activated plantar flexor group through its normal range of motion. Muscle biopsy samples were evaluated 24- and 48-hours after strain injury for the presence of transforming growth factor-[beta] using immunohistochemical techniques and Western immunoblot analysis. Transcript levels for collagen I, collagen III, and transforming growth factor-[beta] were assessed using reverse transcriptase polymerase chain reaction (RT-PCR). Immunohistochemical analysis revealed the presence of TGF-[beta]₂ in areas of myofiber injury, whereas TGF-[beta]₁ was in areas of cell necrosis and phagocytosis. RT-PCR indicated increases in collagen I, collagen III, and TGF-[beta]₁ transcripts 24 hours post-strain injury. Increases in collagen I and collagen III transcripts were more pronounced 48 hours after strain injury. Western immunoblot analysis showed no apparent change in TGF-[beta]₂ levels with injury, but an increase in TGF-[beta]₁ levels which was most pronounced 48 hours post-strain injury. These results indicate that TGF-[beta]₁ levels increase after acute strain injury following increases in TGF-[beta]₁ mRNA correlating with increases in collagen I and collagen III transcripts, whereas TGF-[beta]₂ may be a common resident in skeletal muscle awaiting activation. Supported by NIOSH R01-OH-02918 and AG 17143-01

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Version: OvidSP_UI03.11.00.120, SourceID 59447