

Traditional Chinese Medicine for Topical Treatment of Skeletal Muscle Injury

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Abstract:

Introduction: Muscle injuries are common musculoskeletal problems, but there is a scarcity of pharmaceutical agents for muscle repair and healing. Traditional Chinese Medicine (TCM) frequently employs topical treatments to treat muscle injuries, although scientific evidence supporting their efficacy is lacking. The objective of this study was to explore the *in vivo* effects of a topical 3-herb formula on the repair of muscle contusion injuries, and to provide scientific evidences to support the use of TCM for topical treatments of skeletal muscle injuries.

Materials and Methods: A muscle contusion rat model was developed to investigate the effect and basic mechanisms of a topical TCM formula containing Carthami Flos, Dipsaci Radix, and Rhei Rhizoma on muscle regeneration. After authentication of the herbs, a paste namely CDR, by mixing of the three herbs was formed. It was applied on the contused gastrocnemius muscle of the rats topically for 2, 7 and 14 days. The muscle was harvested for histological, immunohistochemical and gene expression analyses.

Results: Histological results showed demonstrated that the CDR treatment facilitated the muscle repair by increasing the number of new muscle fibers and promoting muscle integrity. CDR treatment also boosted upregulated the expression of Pax7, MyoD and myogenin, as evidenced by via immunohistochemical study. Gene expression analysis indicated that the CDR treatment accelerated the regeneration and remodeling phases during muscle repair.

Conclusions: This study demonstrated that topical CDR treatment was effective to facilitate muscle injury repair. It gave scientific evidence to support the efficacy of topical TCM application on muscle injury.