

THE SIGNATURE OF THE HUMAN TRAPEZIUS MUSCLE

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Introduction

The trapezius muscle is often involved in chronic pain conditions such as work related trapezius myalgia. The predisposing factors that make this muscle particularly prone to these conditions are still poorly understood. We determined the proteomic signature of the trapezius in comparison to the most studied muscle, vastus lateralis.

Methods

Biopsies obtained from five healthy male subjects were analysed using two-dimensional differentiated gel electrophoresis (2-D DIGE). The method enables analysis of expressions and modifications of over two thousand proteins at one time. MALDI-TOF mass spectrometry was used to identify the protein spots. To verify the accuracy of the 2-D DIGE results, additional immunohistochemistry and SDS-PAGE were conducted.

Results

The proteomic signature of these two muscles differed only by approximately twenty proteins under the conditions used. Enzymes involved in oxidative metabolism were more abundant in the trapezius muscle than in vastus lateralis. The differentially expressed contractile proteins correlated to a higher content of slow twitch fibers in the trapezius muscle, and fast twitch fibers in the vastus lateralis.

Conclusion

Further studies investigating differences in other fractions of constitutive and signalling proteins are needed to further clarify the particular susceptibility of the trapezius muscle for work related myalgia.