

## Expression of the estrogen and relaxin receptors in human fascial tissue

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Fascia is a tissue that interact with different structure in a very precise manner. It creates a structural continuity that give form and function to every tissue and organ. It plays a significant role in mechanical tension, transmitting force, correct motor coordination so altered structure of specific components layers could be generate a clinical problem. Recent studies have shown the possible role of the fascial nociceptors to mechanical and chemical stimuli may contribute to myofascial or musculoskeletal pain (1). Many epidemiologic, clinical, and experimental evidence points to sex differences in myofascial pain, and generally adult women more often have myofascial problems than do men (2). It is possible that one of the stimuli to sensitization of fascial nociceptors could come from hormonal factors such as estrogen and relaxin that are involved in extracellular matrix and collagen remodelling (3). Relaxin-2 (RLX-2) is recognized as anti-fibrotic factor that is the ligand for RXFP1. Estrogens and in particular 17 $\beta$ -estradiol (E2) regulate a widespread of physiological functions and the actions are mediated by two estrogen receptor isoforms, ER $\alpha$  and ER $\beta$ . We hypothesized that E2 and relaxin contribute on metabolism and function of myofascial tissue. Immunohistochemical and molecular investigation (real-time PCR analysis) for RXFP1 and ER $\alpha$  localization were carried out in human fascia of different districts (peroneal, abdomen rectum, hip and low back fascia) and in fibroblasts isolated from the same districts, with the aim of describing both protein and RNA expression. ER $\alpha$  and RXFP1 are expressed on fibroblasts of human fascial tissues and RXFP1 expression was particular intense on vessels and nerves. These results are confirmed in isolated fibroblasts derived from the same fascial districts. Not all the cells have the same reactivity but the positive reaction was evident in the cytoplasm of cells for RXFP1 and with more intensity on nuclei of cells for ER $\alpha$ . Our results are the first demonstration that the fibroblasts of different districts of the muscular fasciae express sex hormone receptors. These findings could represent a new target for the care of myofascial pain and the possible stimulation during manipulative treatments and exercises. More studies about the interactions between fibroblasts, extracellular matrix and hormone receptors (estrogen, progesterone, relaxin) could help to understand the role of these receptors on myofascial pain.

### References

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