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Expression of the endocannabinoid receptors in human fascial tissue

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Endocannabinoids are endogenous lipid mediators with wide range of biological effects similar to those of marijuana. They exert their biological effects via two main G-protein-coupled cannabinoid receptors, the CB1 (cannabinoid receptor 1) and CB2 (cannabinoid receptor 2). Cannabinoid receptors have been localized in the central and peripheral nervous system as well as on cells of the immune system, but recent studies gave evidence for the presence of cannabinoid receptors in different types of tissues (1,2) Their presence was supposed in myofascial tissue, suggesting that the endocannabinoid system may help resolve myofascial trigger points, suppressing proinflammatory cytokines such as IL-1beta e TNF-alpha and increasing anti-inflammatory cytokines (3, 4). However, until now the expression of CB1 and CB2 in fasciae and in fascial fibroblasts has not yet been established. In this work small samples of fascia were collected from volunteers patients: for each sample were done a fibroblast cell isolation, immunohistochemical investigation (CB1 and CB2 antibodies) and real time RT-PCR to detect the expression of CB1 and CB2. The immunostaining results demonstrate the expression of CB2 and CB1 on fascial fibroblasts and fascial tissue. In the tissue not all the fibroblasts are positive, whereas the isolated and expanded cells are homogeneous. These results are confirmed by the real time PCR where the specificity of the reaction on fibroblasts and fascial tissue is the same, but the amount of expression in the tissue is lower, for both CB1 and CB2. This is the first demonstration that the fibroblasts of the muscular fasciae express CB1 and CB2. These results could represent a new target for drugs to care fascial fibrosis and inflammation. The presence of the endocannabinoid system in the fascial fibroblasts can also explain the efficacy of cannabis to care myofascial pain and the possible stimulation during manipulative treatments and exercises (5). More studies about the interactions between fibroblasts, extracellular matrix and CB1 and CB2 receptors could help to understand the role of these receptors on myofascial pain.

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