

**International Conference on**

# **Fibromyalgia and Chronic Pain**

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## **Involvement of oxidative stress and nitric oxide in fibromyalgia pathophysiology, a relationship to be elucidated**

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**F**ibromyalgia (FM) is a rheumatologic syndrome characterized by chronic pain associated to others signs and symptoms, such as, sleep disturbances, fatigue, depression, anxiety and others. The pathophysiology is not completely elucidated. Genetic, neuroendocrine, immune and behavioral alterations seem to contribute to its genesis and evolution. Recently some studies have proposed the involvement of oxidative stress and nitric oxide but the mechanism is not clear. Probably this process has begun with a disturbance in the balance of reactive oxygen species (ROS) and antioxidants. The accumulation of ROS, attack the polyunsaturated fatty acids in the cell membrane causing the lipid peroxidation which cause damage to the cell membrane with its rupture and release of contents. The main goal of this review is to gather and organize the available literature about the role of oxidative stress and nitric oxide in the FM symptoms.

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## **Brain network response to acupuncture stimuli in experimental low back pain: An fMRI study**

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**M**ost neuroimaging studies have demonstrated that acupuncture can significantly modulate brain activation patterns in healthy subjects, although only a few studies have examined clinical pain. In the current study, we combined an experimental acute low back pain (ALBP) model and functional magnetic resonance imaging (fMRI) to explore the neural mechanisms of acupuncture analgesia. All ALBP subjects first underwent two resting state fMRI scans at baseline and during a painful episode, and then underwent two additional fMRI scans, once during acupuncture stimulation (ACUP) and once during tactile stimulation (SHAM) pseudorandomly, at the BL40 acupoint. Our results showed that compared with the baseline, the pain state had higher regional homogeneity (ReHo) values in the pain matrix, limbic system, and default mode network and lower ReHo values in the right middle frontal gyrus, right insula, and right cerebellar tonsil; compared with the OFF status (rest time without acupuncture), ACUP yielded broad deactivation in ALBP subjects, including nearly all of the limbic system, pain status, and default network, and also evoked numerous activations in the attentional and somatosensory systems; and compared with SHAM, we found that ACUP induced more deactivations and fewer activations in the subjects. Multiple brain networks play crucial roles in acupuncture analgesia, suggesting that ACUP exceeds a somatosensory-guided mind–body therapy for ALBP. To the best of our knowledge, this is the first fMRI study involving acupuncture for ALBP subjects, and we hope it will help bridge the gap between clinical and experimental pain studies involving acupuncture treatment.

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