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# Fibromyalgia Pain & the Brain

*The pain dysregulation in fibromyalgia is a mystery, even after decades of research. What new insights do we have in this complex pain and how does this new information impact fibromyalgia treatment? We asked Dr. Fanto for his comments on types of pain and some recent research findings.*

## What is hyperalgesia?

Hyperalgesia is an increased response to a painful stimulus over time. For instance, being stuck with a needle is not pleasant but if on one day the prick feels like a 2 and subsequent pricks escalate to a 5 out of 10 point scale (10 being highest pain) the sensation is termed “hyperalgesia”. Another term used is “amplification” of pain response such as in fibromyalgia (FMS). In a University of Florida study<sup>1</sup>, 62 FMS women were given lidocaine or saline injections and hyperalgesia in the injected areas (trapezius, buttocks) improved. However, overall pain perceived by the patient improved in the saline injection group also.



## What is allodynia?

Allodynia indicates a painful response to a normally “non-painful” stimulus. For example, wearing clothes should not “hurt” but in some people with chronic pain like FMS, the weight of clothing “feels” painful to them.

## How does the type of pain affect therapy?

Scientists are not sure why such changes in how pain is perceived occurs. Perhaps the pain “gate keeping” system fails or neurons become too sensitized to painful stimulus. Both hyperalgesia and allodynia are problems in chronic pain conditions. The allodynia in peripheral neuropathy (caused by diabetes) is resistant to opiate and NSAIDs so therapy becomes a challenge.

## What do MRIs tell us about FMS brain activity?

One study looked at functional MRIs in 35 women who had FMS for several years (mean age 47) and 28 healthy, matched controls. FMS subjects reported increased unpleasantness to multisensory stimulation in daily activities. The MRI displayed a decrease in visual and auditory areas of the brain but an increase in sensory regions. In other words, the MRI reflected the reported unpleasantness by the FMS patients. The study authors state this new research shows the brain’s altered process can be linked to core FMS symptoms and may be part of the disease pathology.<sup>2</sup>



## Are there other FMS brain studies?

Actually a team in Sweden found decreased connectivity between areas of the brain that could affect normal pain processing.<sup>3</sup> The 16 FMS subjects refrained from pain medications 48 hours before the start of the pain stimuli (on the thumb) and 72 hours before the functional MRI scans. A total of 15 stimuli which lasted 2.5 seconds each at half minute intervals was performed. In comparison to the 22 healthy controls. Those with FMS had “functional decoupling” (connection) between areas that control pain and sensorimotor signals which could “impair normal pain perception”.



## Are there nutritional therapies that help?

The brain is the organ of high energy needs with specific controls to stay in balance biochemically and generates free radicals by accident.

Some nutrients have been shown to influence the pain “gateway” by supporting the neurotransmitters (NTs) that modify pain signals. One is 5-HTP which is found to be low in FMS and affects pain perception.<sup>4</sup> Another is GABA, the brain’s primary inhibitory NT which can calm the “excitatory” process, and may reduce allodynia. Another excitatory brain nutrient is glutamate, a beneficial amino acid that helps the brain be more alert. Neurons exposed to too much excitatory glutamate, however, can be injured and or die, which is not good.

Magnesium both helps in the brain’s high energy needs and blocks the uptake of too much glutamate by neurons. Glutathione, vitamins C and E help protect neurons from free radicals. Although researchers are not sure why, maintaining an adequate level of vitamin D<sub>3</sub> seems to help reduce fibromyalgia pain.<sup>5</sup> A healthy target level is 50ng/ml of D<sub>3</sub>. Finally, CoQ10 appears to help fight the mitochondrial dysfunction in FMS, which supports energy biosynthesis.<sup>6</sup>

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*References omitted for space consideration and available to medical professionals upon request.*

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