Alpha-melanocyte stimulating hormone (alpha-MSH) is a critically important regulatory neuropeptide. It is produced in the hypothalamus, an area of the brain important for hormonal control of the body, and where the nervous system meets the endocrine system. Small amounts are probably also produced elsewhere in the brainstem. (1)

What does a-MSH do:

- Helps regulate other hormones (cortisol/ACTH, ADH, melatonin, estrogen, progesterone and androgens.)
- Stimulates release of endorphins.
- Regulates inflammation pathways and is part of innate immune system.
- Regulates basic defenses against invading microbes.
- Regulates nerve functioning pathways.
- Regulates weight via reducing food intake
- Stimulates melanocytes to cause tanning of skin
- Is strongly antimicrobial.
- Is strong anti-inflammatory and also regulates inflammatory responses in the body (2).

Consequences of low levels:

- Fatigue, often due to low or dysregulated cortisol and ACTH, and poor conversion of the thyroid hormones T4 to T3.
- Pain – due to inflammation and reduced endorphin production.
- Chronic sleep disorders with non-restful, nonrestorative sleep – at least in part due to low melatonin levels.
- Appetite swings, particularly increased appetite, leading to weight gain.
- Sweats, especially night sweats.
- Loss of control of regulation of body temperature. Imbalanced hormones, including 60% have low ADH / imbalanced osmolality.
- Dysregulated inflammation compounds called cytokines, due to a loss of inflammatory regulation
- Increased intestinal permeability (aka leaky gut) due to increase space between intestinal gap junctions.
- This can then lead to development of antibodies to gluten / gluten intolerance in the absence of Coeliac disease.
- Microbes can overgrow. MARCoNS (Multiple Antibiotic Resistant Coagulase Negative Staphylococci) in
the deep nose is found in 80% of those with low MSH and less than 2% of those with normal MSH.

- Increased susceptibility to biotoxin related illness/CIRS (3).

Low MSH is likely to be a final common pathway in cases of Chronic Fatigue Syndrome. A 2010 study (4) showed that those with Chronic Fatigue Syndrome for less than five years, tended to have higher than normal MSH levels. However the longer their CFS progressed, the lower the MSH tended to become. This may be because initial insults such as stress, biotoxin exposure and GI inflammation tend to initially raise MSH before finally MSH levels become depleted, and the long-term consequences of lowered MSH start showing up such as chronic infections, low cortisol and ADH and poor aromatisation of testosterone to estradiol. This has been mirrored in the conference peer review by Dr Shoemaker’s team showing that those with CFS associated with MARCoNS had clearly lowered MSH levels. (3)

So if you are a Chronic Fatigue Syndrome sufferer, it may well be worth knowing your alpha-MSH levels. Why? Firstly it may help you to understand the physiology of your illness. Secondly it can help you to identify factors, such as biotoxin exposure, and nasal MARCoNS which is clearly associated with lowered MSH levels. Thirdly a treatment protocol is available that reliably raises MSH through elimination of biotoxins, elimination of MARCoNS then finally correction of neuroendocrine abnormalities including usage of Vasoactive Intestinal Polypeptide (VIP) nasal spray, which is known to increase MSH levels and improve chronic fatigue symptoms. 5


4 Shishio-Ikejima et al. The increase of alpha-melanocyte- stimulating hormone in the plasma of Chronic fatigue syndrome patients. BMC Neurology 2010, 10, 73.


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