

Melatonin oral supplementation against fibromyalgia-related skeletal muscle alterations

¹ Gaia Favero - ¹ Alessandra Stacchiotti - ¹ Francesca Bonomini - ¹ Lorena Giugno - ¹ Claudio Lonati - ¹ Valentina Trapletti - ¹ Giorgio Sigorini - ² Antonio Lavazza - ³ Russel J. Reiter - ¹ Rita Rezzani

¹ Anatomy and Physiopathology Division, Department of Clinical and Experimental Sciences, University of Brescia, Brescia, Italia - ² Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna, Brescia, Italia - ³ Department of Cellular and Structural Biology, University of Texas Health Science Center, San Antonio, USA

Fibromyalgia is a chronic idiopathic pain syndrome characterized by widespread musculoskeletal pain and a deep range of other symptoms including disordered sleep, paresthesia, depression and anxiety (1). To date, its aetiopathogenesis and pathophysiology are still not understood, but the musculoskeletal, neuroendocrine and central nervous systems appear to play major roles in the development and progression of fibromyalgia (2). Important factors involved in the pathogenic process of fibromyalgia are oxidative stress and inflammation suggesting that antioxidative supplementation might be important in the management and modulation of fibromyalgia. Recent evidences suggest that melatonin may be suitable for this purpose. Melatonin is a small, highly conserved pineal indoleamine and due to its important and well known antioxidant and antiinflammatory properties, together with also its analgesic effects, our research group studied the beneficial effects of the melatonin oral supplementation against the pathogenetic process of fibromyalgia. In detail, Sprague Dawley rats were randomly treated with reserpine, to reproduce the pathogenic process of fibromyalgia (3), and/or with melatonin (Melapure™ by Flamma S.p.A.). At the end of the treatments, the animals treated with reserpine showed moderate alteration at hind limb skeletal muscle level with difficult in moving, together with a significant expression of several oxidative stress and inflammatory markers at the gastrocnemius muscle level. Interestingly, melatonin, dose and time dependently, reduced the difficulties in walking and the musculoskeletal oxidative stress and inflammatory processes. In summary, this pilot study suggested that melatonin could be an *in vivo* effective tool against musculoskeletal morphofunctional damages and dysfunctions in the management of fibromyalgia-related complications.

Sincere thanks to Flamma S.p.A.- Italy (www.flammagroup.com) for courteously providing the melatonin and for the precious economic support to this study.

References

- [1] Bazzichi et al. (2011) Fibromyalgia: a critical digest of the recent literature. *Clin Exp Rheumatol* 29:S1-S11.
- [2] Nampiaparampil and Shmerling (2004) A review of fibromyalgia. *Am J Manag Care* 10:794-800.
- [3] Ogino et al. (2013) Systemic administration of 5-HT_{2C} receptor agonists attenuates muscular hyperalgesia in reserpine-induced myalgia model. *Pharmacol Biochem Behav* 108:8-15.

Keywords

Inflammation; melatonin; oxidative stress; skeletal muscle.