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Effects of melatonin oral treatment in pristane-induced lupus nephritis mice

Gaia Favero[1], Mariane dos Santos[1], Claudio Lonati[1], Alessandra Stacchiotti[1], Rita Rezzani[1]

[1] Division of Anatomy and Physiopathology, Department of Clinical and Experimental Sciences, University of Brescia, 25123, Italy

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease characterized by lymphocytes hyperactivity and excessive production of pathogenic autoantibodies, pro-inflammatory cytokines and also reactive oxygen species [1]. One of the most severe manifestations of SLE is lupus nephritis (LN), which is characterized by glomerulonephritis and tubulointerstitial inflammation and oxidative stress with also immune-complexes depositing in the renal tissue [2]. Recent evidences suggest that the use of antioxidants in the treatment of LN have satisfactory outcomes. Melatonin is a small, highly conserved pineal indoleamine and due to its important and well known antioxidant and antinflammatory properties [3,4] may be an efficient tool against LN damages. In this study, pristane-induced LN mice were used to investigate the potential protective role of melatonin. At the end of the treatments, the LN animal model presented marked changes in the kidney cytoarchitecture (like glomerular sclerosis, marked tubular degeneration and matrix mesangial expansion) together with significative kidney inflammation, oxidative stress and fibrosis. Interestingly, pristane-mice treated orally with melatonin showed a significative reduction of inflammation, oxidative stress and fibrosis and also of morphological changes at both tubules and glomerular level. In summary, we thought that melatonin may be a potential tool in the management of SLE-glomerulonephritis.

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Keywords

Lupus nephritis, fibrosis, kidney, inflammation, melatonin, oxidative stress