

# Adiponectin as a possible biomarker in Multiple Sclerosis

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**Background:** Adiponectin plays important roles in the regulation of energy homeostasis and insulin sensitivity, enough to be considered a marker for obesity and related diseases. Moreover, an immunomodulatory action in several inflammatory disorders has been demonstrated. Few studies with controversial results analyzed adiponectin role in Multiple Sclerosis (MS), a neuroinflammatory disorder. In this study, we analyzed serum adiponectin levels and its oligomers in MS patients and investigated their potential relationships with disease features.

**Methods:** 99 unrelated MS patients, at moment of diagnosis according to Mc Donald Criteria, were recruited and compared to 87 age- and sex-matched controls. We collected sera from patients at the moment of diagnosis, before starting treatment at baseline. During 3,6 years of follow-up we collected: relapses and total annualized relapse rate (ARR) to calculate disease activity; EDSS score in combination with disease duration to determinate Progression Index (PI) and MSSS (Multiple Sclerosis Severity Score) to evaluate disease progression. Total adiponectin levels were measured by ELISA while oligomers were analyzed by western blotting and FPLC.

**Results:** Serum adiponectin level was significantly higher in MS patients (12,18 µg/ml) compared to controls (10,02 µg/ml) ( $p < 0,001$ ). Similarly, High Molecular Weight adiponectin oligomers expression was significantly higher in MS patients. Patients with higher adiponectin concentration at baseline had significantly higher PI, at long-term follow-up. No difference in adiponectin was found between active/no active patients and among the forms of disease.

**Discussion and conclusions:** Our data demonstrate that in Multiple Sclerosis, as in other autoimmune diseases, adiponectin levels are increased. Importantly, it is a potential biomarker to predict worse prognosis and disease progression. Adiponectin could play a role in the regulation of pro-inflammatory pathways at the basis of MS. Further studies are required to better understand the biological role of adiponectin and its possible usefulness as a biomarker of MS.



