Interferon beta and c-Phycocyanin combination for MS treatment


Introduction

The pathogenic process that takes place in Multiple Sclerosis (MS) is characterized either by signs of autoimmunity, inflammation and demyelination or primary oligodendrocyte loss. Interferon-beta is an approved therapy for MS with immunomodulatory, antiviral and stimulation of neurotrophic substances and endogenous opioids properties. On the other hand, c-Phycocyanin is the principal phycobiliprotein of the Spirulina platensis, a blue - green alga, accounting with several reports regarding its pharmacological properties as a strong antioxidant and anti-inflammatory compound.

Methods

We performed the molecular characterization of cellular immune response (TNF-α, IFN-γ, IL-10, MMP-9, TIMP-1) in MS patients compared to controls. Furthermore, in-vitro stimulation of peripheral blood mononuclear cells from patients with clinically definite Relapsing Remitting MS with IFN-β or c-Phycocyanin was performed, then total RNA was extracted and amplified for CD86, CD28, CTLA-4, CD25, TGF-β, IL-10 Chain Reaction, also CD4+CD25high subset was evaluated using flow cytometry. Finally, splenocytes from 2D2 mice were stimulated with MOG 35-55 and cocultured with either IFN-b, cPc or the combination. Cytokine levels in culture supernatant were measured.

Results

In-vitro stimulation of peripheral blood mononuclear cells

Conclusions

Our findings provide rationale for the combination of this natural antioxidant and immunomodulatory product supporting the therapeutic potential for MS.