Immulina, A Spirulina-derived High Molecular Weight Polysaccharide, Enhances Chemokine Expression In THP-1 Monocytes

Reinhard Grzanna1

1RMG-Biosciences, Baltimore, MD, 2Johns Hopkins Univ., Baltimore, MD, 3Univ. Mississippi, Mississippi, 4Fermosan A/S, Soeborg, Denmark.

ABSTRACT

Spirulina is a dietary supplement valued for its immune-enhancing properties. We recently showed that the immunostimulatory effect of Spirulina is associated with high molecular weight polysaccharides fraction labeled as Immulina. In this study, we evaluated the effect of Immulina on genes encoding the chemokines IL-8, MCP-1, MIP-1α, IL-1α, and IP-10 in THP-1 cells. The results demonstrate that the high molecular weight polysaccharides contained in Spirulina are a key contributor to the immune-enhancing properties of this popular dietary supplement. In vitro cytotoxicity assays showed that Immulina at doses up to 100 μg/ml did not affect the cell viability nor the proliferative capacity of THP-1 cells indicating Immulina, like Spirulina, has a high safety margin. Polysaccharides of microbial and plant origin have previously been recognized as immunostimulants. The effect of Immulina on genes encoding chemokines described in this study suggests that this preparation is capable of stimulating cells of the macrophage/monocyte system. Further characterization of Immulina may provide a well defined preparation for the therapy of bacterial and viral infections.

REFERENCES

Pugh et al. (2001) Planta Medica 67: 737-742

ACKNOWLEDGEMENTS

Supported by NIH-CA, US Department of Agriculture, Ferrosan A/S and Nordic Phytopharma A/S.