Effects of Chlorella on Protein Tyrosine Phosphatase, Matrix Metalloproteinase, Caspase, Cytokine Release and B/T Cell Proliferation and Its Phorbol Ester Receptor Binding Potentials

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[Objectives]

Diverse pharmacological actions of Chlorella and its extracts have been demonstrated in many studies involving humans and experimental animals. A study was recently carried out to clarify the mechanisms for these actions.

[Methods]

Powdered Chlorella samples were evaluated in vitro using 52 methods as to enzymatic activity, receptor binding potentials, effects in stimulating cytokine release from cells and effects on B and T cell proliferation.

[Results]

Table 1 summarizes the improving effects expected of Chlorella on the basis of the results from this study.

Table 1. Effects expected from Chlorella ingestion

Suppressive activity confirmed	Effects expected
Protein tyrosine phosphatase CD45	Immunomodulation
Protein tyrosine phosphatase PTP1C	Immune system control in autoimmune disease
Protein tyrosine phosphatase PTP1B	Effects on breast and ovarian cancer
Protein tyrosine phosphatase T-cell	Immunomodulation on T cells
Matrix metalloproteinase 1, 3, 7, 9	Cancer, rheumatism, autoimmune disease, periodontitis, tissue ulceration, atherosclerosis, aneurysm, heart disease
Caspase 3, 6, 7, 8	Alzheimer’s disease, Parkinson’s disease, brain/myocardial ischemia
Phorbol ester	Suppression of carcinogens

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