

Modulation of cytokine production and complement activity by biopolymers extracted from medicinal plants

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Abstract

This study evaluates the anti-inflammatory activities of the extracts obtained from the medicinal plants *Aster tataricus*, *Pinellia ternata*, *Ostericum koreanum*, *Platycodon grandiflorum*, *Asarum sieboldii*, *Tussilage farfara*, and *Acanthopanax sessiliflorus*. These plants are used in Korea to treat inflammatory and respiratory ailments, including asthma. The hot water extract (HWE) of *A. sessiliflorus* inhibited production of IFN- γ , IL-2, IL-4 and IL-5. The HWE of *A. tataricus*, *O. koreanum*, *P. grandiflorum*, *A. sieboldii* and *T. farfara* had similar inhibitory effects on IFN- γ and IL-5. The endo-polysaccharide (ENP) screened were less active than the HWE and had varying effects on the production of cytokines. The HWE fractions from all the plants except that from *P. grandiflorum* had marked anti-complement activity at a concentration of 1000 $\mu\text{g/ml}$. The ENP of *A. sieboldii*, *T. farfara* and *A. sessiliflorus* exhibited significant anti-complement activity compared to the positive control.

Keywords: Endo-polysaccharide (ENP); Anti-inflammatory; Cytokines; Complement

Introduction

The worldwide increase in inflammatory and allergic diseases has lead to an extensive search for new anti-inflammatory and immunosuppressive agents (Patwardhan, et al., 1990). In recent years, attention has focussed on polysaccharides isolated from fungi, algae, and plants because of their immunomodulatory activities (Ooi and Liu, 2000).

Inflammatory and allergic responses are regulated by the balance of pro- and anti-inflammatory cytokines in tissues (Barnes, 2002; Calixto, et al., 2004). T helper lymphocytes