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## **Immunopharmacological in vitro effects of Eleutherococcus senticosus extracts.**

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The objective of these investigations was to further elucidate the immunopharmacological profile of fluid extracts of *Eleutherococcus senticosus* and to identify the specific role of its characteristic eleutherosides B and E. An ethanolic dry extract of *Eleutherococcus senticosus* was used as starting material for the isolation of the eleutherosides B and E. Immunopharmacological studies included expression of major histocompatibility complex class I and II molecules by rat bone marrow-derived mononuclear phagocytes, human lymphocyte marker flow cytometry, and in vitro testing of human lymphocyte functions. In contrast to the isolated eleutherosides B and eleutherosides E and the re-mixed eleutherosides B and E, the whole ethanolic fluid extract of *Eleutherococcus senticosus* was able to induce and enhance interleukin-1 and interleukin-6 but not interleukin-2 production in vitro. The effective concentration of the whole ethanolic extract ranged from 1.0-0.1 mg/ml for the enhancement of interleukin-1 alpha production and 1.0-0.03 mg/ml for the enhancement of interleukin-6 production. It is concluded that the observed enhancing immunopharmacological activities on acute phase response mediators are best exhibited by the induction with whole ethanolic extracts whereas the species-specific and characteristic eleutherosides B and E are not associated with these activities.

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