Although Echinacea has been used for many years as an immunomodulator [1], its mode of action is still unclear. As such, this study investigated the potential immunomodulatory effects of an Echinacea preparation by measuring leucocyte heat shock protein 70 (hsp70) expression as a biomarker of the immune response. Hsps are among the most highly conserved proteins in nature and are found in all organisms. They are expressed constitutively as well as induced in response to mild, generally non-lethal stress such as inflammation and microbial infections. There is increasing evidence that hsps play key roles as prominent antigens in the humoral and cellular immune responses mediated by antibodies and T cells respectively [2,3]. The involvement of altered hsp expression in a number of disease states has emphasised the important role of these proteins in the modulation of the immune response [4].

The present study was a pilot scale clinical trial involving eleven subjects (five male, six female), orally dosed with the tablet form of an ethanolic extract of two species of Echinacea – purpurea and angustifolia. The aim of the study was to investigate the potential immunomodulatory effects of Echinacea in healthy subjects by measuring leucocyte hsp70 expression as a biomarker of the immune response. Haematology alterations in response to chronic dosing with Echinacea were also examined.

**Methods**

Echinacea Premium Tablets containing 675 mg of E. purpurea root extract and 600 mg of E. angustifolia root extract prepared by ethanol extraction were also assessed using standard haematological analyses. Plasma alkylamide levels were 12 ± 2 ng/mL plasma one hour after ingestion of one Echinacea tablet.

**Results**

Heat shock increased hsp70 expression levels in leucocytes.

Although neither basal nor heat shock hsp70 levels were different, there was a significantly greater fold increase in hsp70 after Echinacea supplementation.

Total white cell counts increased after Echinacea supplementation.

- **Differential cell counts** displayed only non-significant increases after Echinacea supplementation.
- **Plasma alkylamide levels** were 12 ± 2 ng/mL plasma one hour after ingestion of one Echinacea tablet.

**Summary**

Echinacea may alter an immune response through:

- Increased white cell counts.
- Altered expression of leucocyte hsp70 in response to heat shock.

These are indicative of an improved immune response.

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**References:**


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