Effect of oral administration of freshly pressed juice of Echinacea purpurea on the number of various subpopulations of B- and T-lymphocytes in healthy volunteers: results of a double-blind, placebo-controlled cross-over study.

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BACKGROUND: In a recent double-blind placebo-controlled crossover-study the "immune stimulatory" effects (activation of macrophages leading to enhanced phagocytosis and production of several cytokines) of Echinacea purpurea preparations (EPP) which were observed in vitro experiments and following parenteral administration could not be confirmed following oral application of the drug in healthy volunteers. The aim of the present study was to investigate whether or not oral EPP has any effect on important lymphocyte-subpopulations. SUBJECTS AND METHODS: Forty healthy male volunteers (age range 20-40 years) participated in the study. They received either a commercially available pressed juice of E. purpurea herbs or placebo juice using a double-blind placebo-controlled cross-over design with two treatment periods of 14 days. The total number of lymphocytes and 12 subgroups of lymphocytes were determined by using Flow-cytometry. RESULTS: After 1 week of treatment with verum the mean value of the total number of lymphocytes decreased slightly (-6%, p = 0.033) compared to the initial value. Treatment for 1 and 2 weeks with EPP had only minor effects on two of the 12 subtypes of lymphocytes. No significant changes were observed in the verum period for the following types of cells: T- and B-lymphocytes, CD4 + - and CD8 + -T-lymphocytes including the subgroups of "naive" and "memory" CD4 + - and CD8 + -T-lymphocytes as well as the natural killer cells. Using a modified version of the Wilcoxon-Mann-Whitney-U-test, which is claimed to be optimal for the evaluation of the results of studies with a cross-over design, a significant difference was found for the number of CD8 + -T-lymphocytes and natural killer cells corresponding to either a decrease during treatment with verum or an increase in the number of these cells in the placebo period. CONCLUSION: Oral administration of EPP for 1 and 2 weeks has only minor effects on two out of 12 lymphocyte subpopulations determined in the study. The small differences observed in the number of CD8 + -T lymphocytes and natural killer cells are only of questionable physiological relevance.

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