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Effects of *Enterococcus faecalis* sonicated extracts on IL-2, IL-4 and TGF-β1 production from human lymphocytes

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I. Objectives

In order to examine the immunoresponse of host cells to *Enterococcus faecalis,* this in vitro study monitored the production of Interleukin-2(IL-2), Interleukin-4(IL-4) and Transforming growth factor-β1(TGF-β1) in human lymphocytes.

II. Materials and methods

Enterococcus faecalis (ATCC 29212) strains were used in this study. Strains were grown in 1-liter cultures in 85% N2-10% H2-5% CO_2 chamber for 3 days at 37℃. The medium used was 3.7% brain heart infusion broth. Bacterial cells harvested from 1-liter cultures were washed, suspended in 20 ml of phosphate-buffered saline (PBS). Suspensions of bacterial cells were disrupted by sonication on ice for 5 min. Protein concentration was determined by the Bicinchoninic acid (BCA) protein assay.

HPBL were prepared from 20ml of EDTA-anticoagulated venous blood of healthy donors. Lymphocytes were obtained by centrifugation layered over Ficoll-Hypaque.

HPBL suspension(500㎕) containing 1×10^6 cells were placed into each well of flat-bottom 24-well plate. Each culture received medium or varying concentrations of SBE diluted in medium(400㎕). The cells were then incubated for 30 min at 37℃, at which time the cultures received an optimal mitogenic dose of Phytohemagglutinin(PHA). The cells were incubated for 72 hr at 37℃ in humidified air containing 5% CO_2. The level of Interleukin-2(IL-2), Interleukin-4(IL-4) and Transforming growth factor-β1(TGF-β1) was measured by ELISA.

III. Results

Data were analyzed with Kruskal-Wallis test and Mann-Whitney U test. ($P<0.05$)

1. PHA-activated group did exhibit higher level of IL-2 and IL-4 than untreated control group.
2. The levels of expression of IL-2 and IL-4 were significantly decreased following the treatment of high (25㎍/ml) and medium concentration(12.5㎍/ml) of SEF ($P<0.05$) than those of PHA activated group.
3. But low concentration (5㎍/ml) of SEF showed the similar level of IL-2 and IL-4 expression as those of PHA activated group.
4. TGF-β1 was unaffected by SEF treatment.

IV. Conclusions

These results suggested that Sonicated extract of *E. faecalis* cause a dose-dependent reduction in production of IL-2, and IL-4 from lymphocytes.