

## DIFFERENTIAL EFFECT OF BETULIN AND BETULINIC ACID ON CYTOKINE PRODUCTION IN HUMAN WHOLE BLOOD CELL CULTURES

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Betulin and betulinic acid, plant-derived triterpenoid compounds, have been described to possess anti-inflammatory activity. In this paper, we examine the ability of both compounds to induce and modulate cytokine production in human whole blood cell cultures. The results indicate that betulin is a modest TNF- $\alpha$  inducer and also an enhancer of mitogen-induced TNF- $\alpha$  production. In contrast to betulin, betulinic acid is a modulator of cytokine production by Th1/Th2 cell subpopulations which slightly enhances IL-10 formation and inhibits IFN- $\gamma$  production, reducing IFN- $\gamma$ /IL-10 ratio from 3.6 to 2.6.

**Key words:** *betulin, betulinic acid, TNF- $\alpha$ , IFN- $\gamma$ , IL-10*

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