

Immunomodulatory activity of dioscorin, the storage protein of yam (*Dioscorea alata* cv. Tainong No. 1) tuber.

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Abstract

The purified dioscorin from yam (*Dioscorea alata* L. cv. Tainong 1) tuber was previously reported (Hsu et al., 2002. *J. Agric. Food Chem.*, 50, 6109-6113). In this report, we evaluated its immunomodulatory ability in vitro in the presence of polymyxin B (50 microg/ml) to eliminate lipopolysaccharide (LPS) contamination. Dioscorin (5-100 microg/ml) was able to stimulate nitric oxide production (expressed as nitrite concentrations) in RAW264.7 cells. The stimulation index on the phagocytosis of RAW264.7 cells against *E. coli* and the oxidative burst (determined by the intensity of rhodamine fluorescence) of RAW264.7 cells were both enhanced by different concentrations of dioscorin (5-100 microg/ml). The cytokine production, including IL-6, TNF-alpha, and IL-1beta in dioscorin-treated RAW264.7 cells or human monocytes, was measured in the cultured medium. Dioscorin (5-100 microg/ml) was found able to induce IL-6, TNF-alpha, and IL-1beta production in RAW264.7 cells and human monocytes. To evaluate the effects of dioscorin on the proliferation of spleen cells from BALB/c mice, phytohemagglutinin (PHA, 2 microg/ml) alone or PHA mixed with different concentrations of dioscorin (10, 25, and 50 microg/ml) was used to treat spleen cells for 24h. The stimulated proliferation index of splenic cells ranged from 1.38- to 1.48-fold of PHA alone for PHA mixed with different concentrations of dioscorin (10, 25, and 50 microg/ml). We suggest that the tuber storage protein of yam dioscorin functions as an immunomodulatory substance.