

Suppression of Immunostimulatory Function of Dendritic Cells and Prolongation of Skin Allograft Survival by Dryocrassin

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Abstract : Dendritic cells (DCs) are the major professional antigen-presenting cells for the development of optimal T-cell immunity. DCs can be used as pharmacological targets to screen novel biological modifiers for the treatment of harmful immune responses, such as transplantation rejection. *Dryopteris crassirhizoma* Nakai (Aspiadaceae) is used for traditional herbal medicine in the region of East Asia. The root of this fern plant has been listed for treating inflammatory diseases. Dryocrassin is the tetrameric phlorophenone component derived from *Dryopteris*. Here, we tested the immunomodulatory potential of dryocrassin on lipopolysaccharide (LPS)-stimulated activation of mouse bone marrow-derived DCs in vitro and in skin allograft transplantation in vivo. Results demonstrated that dryocrassin reduced the secretion of tumor necrosis factor- α , interleukin-6, and interleukin-12p70 by LPS-stimulated DCs. The expression of LPS-induced major histocompatibility complex class II, CD40, and CD86 on DCs was also blocked by dryocrassin. Moreover, LPS-stimulated DC-elicited allogeneic T-cell proliferation was lessened by dryocrassin. In addition, dryocrassin inhibited LPS-induced activation of I κ B kinase, JNK/p38 mitogen-activated protein kinase, as well as the translocation of NF- κ B. Treatment with dryocrassin obviously diminished 2,4-dinitro-1-fluorobenzene-induced delayed-type hypersensitivity and prolonged skin allograft survival. Dryocrassin may be one of the potent immunosuppressive agents for transplant rejection through the destruction of DC maturation and function.

Keywords : dryocrassin, dendritic cells, immunosuppression, skin allograft

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