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### Usefulness of immunomodulators for maturation of dendritic cells.

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#### Abstract

Biological response modifiers (BRMs) augment the cytotoxic activity of various effector cells by the induction of multiple cytokines and suppression of immunosuppressive factors. BRMs are used extensively in adjuvant therapy for gastric cancer in Japan. In dendritic cell (DC)-based vaccine therapy, the quality of DCs is important in inducing strong antitumor immunity. A good manufacturing practice (GMP) grade agent for DCs maturation is desirable for safety. Here we report the effects of two BRMs, OK432 and PSK, which are GMP grade agents for the functional maturation of DCs. OK432 and PSK were examined in vitro, and compared with lipopolysaccharide (LPS) and a cytokine cocktail (IL-1beta, TNF-alpha, IL-6 and PGE2). In the immunophenotypical analysis, the expression of CD80 and CD83 of DCs stimulated with OK-432 increased significantly compared with PSK and medium, and this up-regulation was the same as levels of DCs stimulated with cytokine cocktail. DCs stimulated with OK-432 showed significantly higher production of IL-12 and Th1-type cytokines (IL-2 and IFN-gamma) compared with DCs stimulated with LPS or cytokine cocktail. OK-432 stimulated DCs could induce the significantly high level of cytotoxic T cell activity compared with PSK-stimulated or unstimulated DCs. These results suggest that OK432 is a GMP-grade reagent that promotes functional maturation of DCs and could be applied in DC-based vaccinations.

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