We investigated whether commensal bacteria modulate activation and maturation of bone marrow-derived DC and their ability to prime CD4(+) T cells. We used Escherichia coli mpk, which induces colitis in gnotobiotic IL-2-deficient (IL-2(-/-)) mice, and Bacteroides vulgatus mpk, which prevents E. coli-induced colitis. Stimulation of DC with E. coli induced TNF-alpha, IL-12 and IL-6 secretion and expression of activation markers. Moreover, stimulation of DC with E. coli increased T cell activation and led to Th1 polarization. Stimulation with B. vulgatus led only to secretion of IL-6, and DC were driven into a semi-mature state with low expression of activation markers and did not promote Th1 responses. B. vulgatus-induced semi-mature DC were non-responsive to stimulation by E. coli in terms of maturation, T cell priming and TNF-alpha but not IL-6 production. The non-responsiveness of B. vulgatus-stimulated DC was abrogated by addition of anti-IL-6 mAb or mimicked with rIL-6. These data suggest that B. vulgatus-induced IL-6 drives DC into a semi-mature state in which they are non-responsive to proinflammatory activation by E. coli. This in vitro mechanism might contribute to the prevention of E. coli-triggered colitis development by B. vulgatus in vivo; high IL-6 mRNA expression was consistently found in B. vulgatus-colonized or B. vulgatus/E. coli.
coli co-colonized IL-2(-/-) mice and was associated with absence of colitis.