

**ACTIVATION OF BOVINE B LYMPHOCYTES, MONOCYTES AND MACROPHAGES
BY CPG OLIGODEOXYNUCLEOTIDES**

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Bacterial DNA and synthetic oligodeoxynucleotides (ODN) that contain unmethylated CpG dinucleotides (CpG ODN) have immunostimulatory properties that include activation of murine and human B cells and induction of proinflammatory cytokines by monocytes/macrophages and dendritic cells. In this study, we compared the effects of CpG ODN, that were defined to stimulate strong responses in either mouse or human leukocytes, on stimulation of bovine B lymphocyte proliferation and macrophage cytokine mRNA expression. The optimal CpG ODN was then tested for induction of cytokines in peripheral blood mononuclear cells (PBMC), monocytes and macrophages. At a high ODN concentration (40 μ M), all but two CpG ODN tested stimulated B cell proliferation. This stimulation was CpG dependent. CpG ODN 2059 shown to activate human leukocytes also induced bovine B cell proliferation at a lower concentration (10 μ M) when compared with CpG ODN active for murine leukocytes. Furthermore, ODN 2059 induced IL-6 and IL-12 production by PBMC, monocytes, and macrophages. In contrast, IL-1 β and TNF- α production were either very low or undetectable. Consistent with increased IL-12 production, ODN 2059 also stimulated IFN- γ production by PBMC. The levels of cytokines induced by ODN 2059 were comparable to those generated in response to *E. coli* DNA or LPS. The data indicate the potential use of CpG ODN 2059 as an adjuvant to enhance both antibody and cell mediated immunity against diseases caused by intracellular pathogens of cattle.