

CERTIFICATE OF ANALYSIS – TECHNICAL DATA SHEET

Product name	CpG-A DNA (ODN 2216), Human/Mouse	Expiry date	-
Catalog number	HC4037		
Lot number	-	Activity	N.A.
Volume	Reconstitute with distilled/de ionized water	Amount	200 nmol (1274 µg)
Formulation	Lyophilized purified 20-mer CpG ODN	Concentration	N.A.
Host Species	20-mer CpG ODN	Purification	N.A.
Endotoxin	<24 EU/mg	Purity	>95%
Storage	4°C		

Application notes

	IHC-F	IHC-P	IF	FC	FS	IA	IP	W
Reference #					3-6			
Yes					•			
No								
N.D.	•	•	•	•		•	•	•

N.D.= Not Determined; IHC = Immuno histochemistry; F = Frozen sections; P = Paraffin sections; IF = Immuno Fluorescence; FC = Flow Cytometry; FS = Functional Studies; IA = Immuno Assays; IP = Immuno Precipitation; W = Western blot

- FS: CpG-A DNA can be used in biological assays in vitro to activate cells. Furthermore, CpG-A DNA can be used as an immune modulating agent. For in vitro stimulation, 0.05 to 3 µM can be used. It is recommended that users test the reagent and determine their own optimal concentrations.

General Information
Description

ODN 2216 is a prototype of the class of CpG-A oligodeoxynucleotides (ODN), also known as 'D'-type ODN, and contains a phosphodiester (PO) backbone. It is particularly effective for activating NK cells and inducing IFN-alpha production in plasmacytoid dendritic cell (PDC) precursors. The vertebrate immune system has evolved innate immune defense pattern recognition receptors (PRRs) that detect unmethylated cytosine-phosphate-guanine (CpG) motifs within bacterial DNA. Cellular activation by CpG motifs occurs via the Toll signal pathway. The Toll-like receptor-9 (TLR9, CD289) appears to be a major component of the CpG-DNA receptor, acting by direct binding to CpG-DNA, which triggers the induction of cell signaling pathways including the mitogen activated protein kinase (MAPKs) and NFκB, leading to stimulation of various cells of the immune system. The human TLR9 is expressed in B cells and PDC. Mice also express TLR9 in the myeloid compartment. Optimal sequences for activating TLR9 vary among species. Synthetic ODN contain CpG-DNA motifs mimicking the immunostimulatory effects of bacterial DNA and can, therefore, be used as immunoprotective agents, vaccine adjuvants and anti-allergic agents. CpG ODN also affects immune tolerance and autoimmunity. Different classes of CpG ODN are characterized each with distinct effects on the immune response: CpG-A ('D'-type), CpG-B ('K'-type), and CpG-C. CpG-A ODN are characterized by poly-G motifs with phosphorotioate (PS) linkages at the 5' and 3' ends (facilitating cellular uptake) and a PO palindromic CpG-containing sequence in the ODN center. CpG-A ODN induces large amounts of IFN-alpha in PDC (unlike CpG-B), resulting in strong activation and IFN-gamma production in NK cells and gamma-delta T cells, but fails to activate B cells. Human monocytes exposed to the cytokine milieu elicited by CpG-A can differentiate into dendritic cells. The prototype sequence of a CpG-A is the 20-mer ODN 2216 that mimics viral infection of PDC and is able to modulate the immune response in both human and mice. It has the following sequence: 5'-ggGGGACGATCGTCgggggG-3'. Lowercase letters represent PS linkage, uppercase letters represent PO linkage 3' of the base and bold letters represent CpG dinucleotides.

References

- Krieg, A; CpG motifs in bacterial DNA and their immune effects. Annu Rev Immunol 2002, 20: 709
- Krug, A et al; CpG-A oligonucleotides induce a monocyte-derived dendritic cell-like phenotype that preferentially activates CD8 T cells. J Immunol 2003, 170: 3468
- Huijbregts, R et al; Hormonal Contraception and HIV-1 Infection: Medroxyprogesterone Acetate Suppresses Innate and Adaptive Immune Mechanisms. Endocrinology 2012, 154:1282
- Chen, J et al; CpG oligodeoxynucleotide induces bone marrow precursor cells into myeloid-derived suppressor cells. Mol Med Rep 2013, 8:1149
- Li, H et al; Interferon-induced mechanosensing defects impede apoptotic cell clearance in lupus. J Clin Inv 2015, 125:2877
- Michel, K et al; Effect of hormonal contraception on the function of plasmacytoid dendritic cells and distribution of immune cell populations in the female reproductive tract. J Acquir Immune Defic Syndr 2015, 68:511

Storage&stability Caution: vial is under vacuum. Lyophilized product should be stored at 4°C. Store stock solution in aliquots at –20°C. Repeated freeze and thaw cycles will cause loss of activity. Under recommended storage conditions, product is stable for one year.

Precautions For research use only. Not for use in or on humans or animals or for diagnostics. It is the responsibility of the user to comply with all local/state and federal rules in the use of this product. Hycult Biotech is not responsible for any patent infringements that might result from the use or derivation of this product.

We hereby certify that the above-stated information is correct and that this product has been successfully tested by the Quality Control Department. This product was released for sale according to the existing specifications. This document has been produced electronically and is valid without a signature.

Approved by Manager of QC
Robbert Zwinkels

Date
12/11/2018

Do you have any questions or comments regarding this product? Please contact us via support@hycultbiotech.com.