Innaxon
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PRODUCT DATA SHEET

CTRL2-ODN (Control for iODN and CpG-ODNs) Endotoxin-free (sterile)

Cat. No.: IAX-200-208 **Lot. No.:** A091322-200208

Sequence	5'-gctcctagtagagatctcag-3' (lower case letters: phosphorothioate linkage: nuclease resistant)
Synonyms	CTRL ODN-2, Control for inhibitory ODNs (iODNs) and CpG ODNs (TLR9 agonists)
MW	7,324 g/mol
Formulation	Lyophilised. Sterile. 100µg size includes 1.5ml ddWater Endotoxin-free (sterile) (Cat. No.: IAX-900-002-LD15). 1mg size includes 10ml ddWater Endotoxin-free (sterile) (Cat. No.: IAX-900-002-L010).
Endotoxin-free	Bacterial Endotoxin Test (kinetic turbidimetric LAL method) according to Ph. Eur. 9. Passed according to specification: Endotoxin-free: <0.002 EU/µg.
Sterility	Filter method: according to Ph. Eur. 9. Passed according to specification: • No growth in Thioglycolate medium at 30-35°C after 14 days. • No growth in Soybean Casein Digest Broth (TSB) at 20-25°C after 14 days.
Handling	Keep sterile. Reconstitution: Dissolve total vial content in sterile endotoxin-free water or PBS. Add 50% of solvent and let dissolve for 10min. Add remaining 50% of the solvent and mix thoroughly. Moderate warming may aid dissolving.
Activity	Negative control ODN for in vivo use in rodents (50-150µg per injection). As active use CpG ODN or iODN.
Shipping	Ambient
Storage	2-8°C. After reconstitution in water prepare aliquots, store between -15°C and -25°C (shelf-life: 6 months). Avoid freeze/thaw cycles. After thawing stable for one day at 2-8°C, and do not freeze again.
Stability	2 years after receipt (unopened and as supplied)
MSDS	Available on request

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General Information

- Unmethylated CG dinucleotides within particular sequence contexts are responsible for the immunostimulatory activity of bacterial DNA. Synthetic oligonucleotides (ODN) that contain such **CpG motifs** (**CpG ODNs**) mimic microbial DNA.
- The innate immune system of vertebrates has the ability to recognize CpG motifs in microbial DNA via the Toll-like receptor (TLR) 9 if the CpG ODN were free of additional immune stimulatory contaminants often present in synthetic commercial CpG ODN preparations designed for molecular biology applications (i.e. PCR). Given that high quality CpG ODNs were used [i.e. endotoxin-free], a close link has been established between the expression of TLR9 on certain immune cell subsets and the modulation of the immune system by CpG DNA.
- Different types of **CpG ODNs** were identified based on their differing biological effects on different cell types: ODN **Type A** is a potent inducer of IFN-alpha in human PDC, (i.e. ODN 1585 or 2216) leading to antigen presenting cell (APC) maturation, whereas ODN **Type B** (i.e. ODN 2006 or ODN 1668 / ODN 1826) is a weak inducer of IFN-alpha but rather stimulates IL-8 production and increasing costimulatory and Ag-presenting molecules and triggers proliferation of B-cells and IgM and IL-6 production. A third type of CpG ODN has been identified, termed ODN **Type C**, with both high induction of INF-alpha in PDC and activation of B-cells. The sequence of CpG Type C (also called K) (i.e. ODN 2395 or M362) combines elements of both Type A and Type B and contain a central palindromic sequence with CG dinucleotides, a characteristic feature of Type A, and a 'TCGTCG' motif at the 5' end, present in Type B CpG ODNs.
- Although the CpG motifs are thought to differ between mice and humans, in both species the recognition of CpG ODNs is mediated by TLR9.The optimal CpG motif in humans is GTCGTT and GACGTT for the murine sequence. However, recent evidence suggests that this sequence specificity is restricted to phosphorothioate (PS)-modified ODN and is not observed when a natural phosphodiester backbone is used. In recent years sequence requirements, specificity, signalling pathways and kinetics of the TLR9 suppression by '**inhibitory ODNs**' (**iODNs**) have been investigated.

References

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