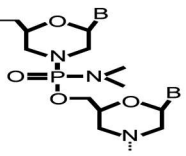
GENE TOOLS, LLC
www.gene-tools.com

Morpholinos



HPLC purification of Morpholino Oligos

Gene Tools is excited to announce that we now offer HPLC purified Morpholino Oligos.

Morpholino oligonucleotides are uncharged at physiological pH due to their neutral phosphorodiamidate linkage, a feature which contributes to their excellent specificity, stability and resistance to nucleases in biological systems.

Gene Tools Morpholinos are synthesized by coupling one base at a time using optimized chemistry which achieves approximately 99% efficiency. Small inefficiencies in coupling and deprotection steps during oligo elongation can lead to accumulation of truncations and deletion impurities in the final product.

Gene Tools utilizes Anion exchange (AEX) HPLC as an effective method for removing impurities. Under basic conditions the guanine and thymine bases become deprotonated, imparting a net negative charge to the otherwise neutral molecule. This charge allows purification by AEX HPLC. Oligos are then processed through a solid phase extraction cartridge which is used to neutralize and desalt the Morpholino. The final product is then lyophilized to a salt free white solid for shipment.

An impurity missing a single base can be resolved from the full-length product if the missing residue is a guanine or thymine, however impurities with identical charge character are poorly resolved with this method (e.g. N-1 oligos with a missing cytosine or adenine, missing end modifications without a charge).

Gene Tools typically achieves greater than 90% purity of unmodified oligo analyzed by AEX HPLC. Gene Tools recommends HPLC for oligos used in Morpholino conjugates and experimental conditions requiring highly purified oligo.

References:

https://doi.org/10.1021/acs.jmedchem.4c00803

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