

3'-O-Me-m⁷G(5')ppp(5')G
RNA Cap
Structure Analog



1-800-632-7799
info@neb.com
www.neb.com



S1411S 008140617061

S1411S

1 μ mol Lot: 0081406

Store at -20°C Exp: 6/17

3'-O-Me-m⁷G(5')ppp(5')G Sodium Salt

Blocking of the 3'-hydroxyl of m⁷G with 3'-O-Me assures that the capped transcripts are homogeneous. The 3'-hydroxyl of the non-methylated G is the only 3'-hydroxyl available for initiation (1).

Description: The 5' terminal m⁷G cap present on most eukaryotic mRNAs promotes translation *in vitro* at the initiation level (2,3,4). For most RNAs,

elimination of the cap structure causes a loss of stability, especially against exonuclease degradation (5), and a decrease in the formation of the initiation complex of mRNAs for protein synthesis (5,6). Certain prokaryotic mRNAs containing a 5' terminal cap structure are translated as efficiently as or more efficiently than eukaryotic mRNAs in a eukaryotic cell-free protein synthesizing system (6). Also a cap requirement has been observed for splicing eukaryotic substrate RNAs (7).

A method using *E. coli* RNA Polymerase primed with m⁷G(5')ppp(5')G or m⁷G(5')ppp(5')A for an efficient *in vitro* synthesis of capped RNAs has been developed by Contreas (8). Larger amounts of capped RNAs are produced by transcription systems using SP6 RNA Polymerase primed with m⁷G(5')ppp(5')G (7).

Quality Controls

The purity and identity of 3'-O-Me-m⁷G(5')ppp(5')G (ARCA) is \geq 95% as determined by HPLC analysis and mass spec respectively.

The RNA Cap Structure Analog is functionally tested for recognition by an RNA Polymerase and its incorporation into a run-off transcript.

Molecular Formula: C₂₂H₃₂N₁₀O₁₈P₃ (Free Acid)

Molecular Weight: 817.47 g/mol (Free acid)

Extinction Coefficient: $\lambda_{260} = \sim 19,000$ Lmol⁻¹ cm⁻¹

Note: Addition of 100 μ l water gives approximately a 10 mM solution.

References:

1. Peng, Z.-H. et al. (2002) *ORG Lett.* 4(2)
2. Shatkin, A.J. (1978) *Cell.* 9, 645-653.
3. Fillipowicz, W. (1978) *FEBS Lett.* 96, 1-11.
4. Banerjee, A.K. (1980) *Microbiol. Rev.* 44, 175-205.
5. Miura, K. (1981) *Adv. Biophys.* 14, 205-238.
6. Shatkin, A.J. et al. (1977) *Nucleic Acids. Res.* 4, 3065-3081.
7. Konarska, M.M. et al. (1984) *Cell* 38, 731-736.
8. Contreas, R. et al. (1982) *Nucleic Acids. Res.* 10, 6353-6363.
9. Paterson, B.M. and Rosenberg, M. (1979) *Nature* 279, 696-701.

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