3´-O-Me-m^{7}G(5´)ppp(5´)G RNA Cap Structure Analog

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

S1411S 00914081708 1

S1411S

1 µmol **Lot: 0091408**

Store at –20°C **Exp: 8/17**

3´-O-Me-m^{7}G(5´)ppp(5´)G Sodium Salt

Blocking of the 3´ -hydroxyl of m^{7}G 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 m^{7}G 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 m^{7}G(5´)ppp(5´)G or m^{7}G(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 m^{7}G(5´)ppp(5´)G (7).

Quality Controls

The purity and identity of 3´-O-Me-m^{7}G(5´)ppp(5´)G (ARCA) is ≥ 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: $C_{22}H_{32}N_{10}O_{18}P_3$ (Free Acid)

Molecular Weight: 817.47 g/mol (Free acid)

Extinction Coefficient: λ_{260} = ~19,000 Lmol-1 cm-1

Note: Addition of 100 µl 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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