G(5´)ppp(5´)A RNA Cap Structure Analog

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S1406S 001160319031

S1406S

1 µmol **Lot: 0011603**
Store at –20°C **Exp: 3/19**

G(5´)ppp(5´)A Sodium Salt

Description: The 5´ terminal m^7G cap present on most eukaryotic mRNAs promotes translation *in vitro* at the initiation level (1,2,3). For most RNAs, elimination of the cap structure causes a loss of stability, especially against exonuclease degradation (4), and a decrease in the formation of the initiation complex of mRNAs for protein synthesis (4,5). 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 (5). Also a cap requirement has been observed for splicing eukaryotic substrate RNAs (6).

A method using *E. coli* RNA polymerase primed with $m^7G(5´)ppp(5´)G$ or $m^7G(5´)ppp(5´)A$ for an efficient *in vitro* synthesis of capped RNAs has been developed by Contreas (7). Larger amounts of capped RNAs are produced by transcription systems using SP6 RNA polymerase primed with $m^7G(5´)ppp(5´)G$ (6).

Quality Controls

The purity and identity of G(5´)ppp(5´)A (Cap Analog) 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: $C_{20}H_{27}N_{10}O_{17}P_3$ (Free Acid)

Molecular Weight: 772.41 g/mol (Free acid)

Extinction Coefficient: λ_{260} = ~27,100 Lmol-1 cm-1

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

References:

1. Shatkin, A.J. (1978) *Cell.* 9, 645–653.
2. Fillipowicz, W. (1978) *FEBS Lett* 96, 1–11.
3. Banerjee, A.K. (1980) *Microbiol. Rev.* 44, 175–205.
4. Miura, K. (1981) *Adv. Biophys.* 14, 205–238.
5. Shatkin, A.J. et al. (1977) *Nucleic Acids. Res.* 4, 3065–3081.
6. Konarska, M.M. et al. (18984) *Cell* 38, 731–736.
7. Contreas, R. et al. (1982) *Nucleic Acids. Res.* 10, 6353–6363.
8. Paterson, B.M. and Rosenberg, M. (1979) *Nature* 279, 696–701.

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CERTIFICATE OF ANALYSIS

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