m^{7}G(5´)ppp(5´)G RNA Cap Structure Analog

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

S1404S 004120815081

S1404S

25 A_{260} units **Lot: 0041208**

Store at –20°C **Exp: 8/15**

m^{7}G(5´)ppp(5´)G Sodium Salt

Description: The 5´ terminal m^{7}G 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^{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 (7). Larger amounts of capped RNAs are produced by transcription systems using SP6 RNA polymerase primed with m^{7}G(5´)ppp(5´)G (6).

Note: Addition of 131 µl water gives approximately a 10 millimolar solution.

Chromatographic Analysis:

HPLC HAISIL 300 C18 5 µm 50 x 10 mm

45 min linear grad 0.1M TEAB 0–20% CH_3CN

RT = 9.5 minutes

TLC PEI Cellulose:

0.35 M LiCl 3.5 M urea

Mobility 0.73 vs xylene cyanol

Unit Definition:

MW = 803 daltons

ε_{260} = ~19000

23.7 A_{260} units/mg

25 A_{260} units = ~1.05 mg = ~1.31 micromoles and when dissolved in 131 µl water is approximately a 10 millimolar 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. (1984) *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.

CERTIFICATE OF ANALYSIS

m^{7}G(5´)ppp(5´)G RNA Cap Structure Analog

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

S1404S 004120815081

S1404S

25 A_{260} units Lot: 0041208

Store at –20°C Exp: 8/15

m^{7}G(5´)ppp(5´)G Sodium Salt

Description: The 5´ terminal m^{7}G 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^{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 (7). Larger amounts of capped RNAs are produced by transcription systems using SP6 RNA polymerase primed with m^{7}G(5´)ppp(5´)G (6).

Note: Addition of 131 µl water gives approximately a 10 millimolar solution.

Chromatographic Analysis:

HPLC HAISIL 300 C18 5 µm 50 x 10 mm

45 min linear grad 0.1M TEAB 0–20% CH_3CN

RT = 9.5 minutes

TLC PEI Cellulose:

0.35 M LiCl 3.5 M urea

Mobility 0.73 vs xylene cyanol

Unit Definition:

MW = 803 daltons

ε_{260} = ~19000

23.7 A_{260} units/mg

25 A_{260} units = ~1.05 mg = ~1.31 micromoles and when dissolved in 131 µl water is approximately a 10 millimolar 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. (1984) *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.

CERTIFICATE OF ANALYSIS