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Product Information

Betaine solution
5 M, PCR Reagent

Catalog Number **B0300**
Store at 2-8 °C

TECHNICAL BULLETIN

Product Description
The addition of 1.0-1.7 M aqueous betaine to a PCR mixture has been reported to reduce the base pair composition dependence on DNA strand melting.[1]

DNase, RNase, and protease: None detected

Suitable for use in the Polymerase Chain Reaction (PCR).

Product Profile
PCR Suitability
1.2 M aqueous betaine was incubated in a 100 µl PCR reaction containing: 10 mM Trizma®-HCl, pH 8.3 at 25 °C, 50 mM KCl, 1.5 mM $MgCl_2$, 0.001% (w/v) gelatin, each dNTP at 200 µM, primers defining an approximately 500 base pair region of λ DNA at 1.0 µM each, λ DNA template at 1 ng/100 µl, and *Taq* DNA polymerase at 2.5 units/100 µl. The reaction underwent 25 cycles of 94 °C to denature the double stranded DNA, 55 °C to anneal the DNA segments, and 72 °C to extend the DNA segments. A single band of approximately 500 base pairs was visualized following electrophoresis of the reaction product in a 1.5% agarose gel.

Endonuclease-Exonuclease
One µg of λ Hind III fragments was incubated for 16 hours at 37 °C with 1.2 M aqueous betaine in a 50 µl reaction mixture containing 30 mM Trizma®-HCl, pH 7.8, 50 mM NaCl and 10 mM $MgCl_2$. No degradation of the DNA fragments was detected following agarose gel electrophoresis.
Detection limit: Degradation of 10% of the DNA substrate is detectable.

Endonuclease (Nickase)
One µg of pBR322 DNA was incubated for 16 hours at 37 °C with 1.2 M aqueous betaine in a 50 µl reaction mixture containing 30 mM Trizma®-HCl, pH 7.8, 50 mM NaCl and 10 mM $MgCl_2$. No conversion of the covalently closed circular DNA to the nicked or linear form was observed following agarose gel electrophoresis. Detection limit: Conversion of 1% of the DNA substrate is detectable.

RNase
Two µg of transfer RNA were incubated for 16 hours at 37 °C with 1.2 M aqueous betaine in a 50 µl reaction mixture containing 30 mM Trizma®-HCl, pH 7.8, 50 mM NaCl and 10 mM $MgCl_2$. No degradation of the tRNA was detected following polyacrylamide gel electrophoresis.
Detection limit: Degradation of 10% of the tRNA substrate is detectable.

References
Rees, William A., et al., Betaine can eliminate the base pair composition dependence of DNA melting. Biochemistry, **32**, 137-144 (1993)

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