BETAINE ENHANCER SOLUTION 5M

Cat. No.: 257543

-	Betaine Enhancer Solution 5M
ID No.	CL1.000-0035
Cap colour	White
Content	5 x 1 ml

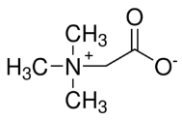
General Description

Betaine Enhancer Solution is one of the most effective additives over a wide range of different templates, including GC-rich sequences and templates known to be extremely difficult to amplify. The performance of Betaine Enhancer Solution is superior compared to standard enhancers such as form amide, DMSO, TMAC, BSA and non-ionic detergents. Betaine Enhancer Solution is an excellent enhancer especially when used with GC-rich regions or templates with a high degree of secondary structures.

The Function of Betaine Enhancer Solution

Betaine enhancer solution lowers the DNA melting temperature and has an enhancing effect on the polymerase.

In detail, Betaine binds preferentially to AT rich sequences in the major groove, thereby stabilizing AT rich regions of the DNA. Because AT forms 2 hydrogen bonds and GC forms 3, the bonding of AT is less stable than the one of GC. As a consequence of the stabilizing effect of Betaine on AT bonding, the stability of AT bonding and GC bonding is brought close to an equal level. At the same time, Betaine has a sequence independent destabilizing effect on all DNA. Summarized, the Tm of AT rich and GC rich sequences are equalized and the overall Tm is lowered. Furthermore, Betaine aids the processivity of thermostable polymerases and reduces "pauses" in polymerization caused by secondary structure that can induce the polymerase to disassociate from the DNA strand.



Betaine Enhancer Solution 5M
5 M Betaine in solution in PCR-grade H2O

Recommended Storage and Stability

Long term storage at -20 °C. Product expiry at -20 °C is stated on the label.
Option: Store at +4 °C for up to 6 months.

Pre-PCR Considerations

Betaine has a decreasing effect on the melting temperature of DNA and primers. Therefore, denaturation temperatures as well as primer annealing temperatures should be reduced by 1 – 5 °C. The optimal annealing temperature should be determined individually for each reaction.

Determining the optimal buffer / enhancer combination for your application.

By running the reactions using different buffers with and without enhancer, the optimal reaction conditions should be found for the specific application. For an example see figure 1.

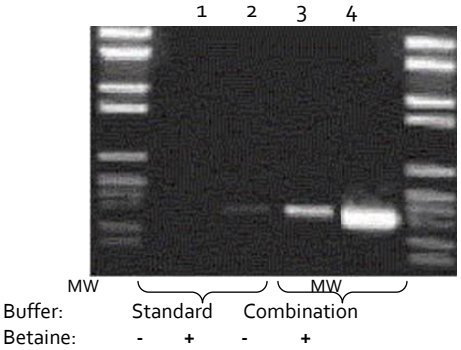


Figure 1: Efficacy of different buffer – enhancer combination
cDNA was PCR amplified using the indicated conditions and equal amounts of the reactions were loaded on an agarose gel
1x Standard Buffer
1x Standard Buffer / Betaine (final concentration 1 M)
1x Combination Buffer
1x Combination Buffer / Betaine (final concentration 1 M)

For Research Use Only. Not for use in diagnostics procedures.

Other product sizes, combinations and customized solutions are available. Please look at www.dutscher.com or ask for our complete product list for PCR Enzymes. For customized solutions please contact us.

Made in Europe

Issued 04/2023