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ProductInformation

Polymer-Aide PCR Enhancer
Product Code **P 1623**

Store at Room Temperature

TECHNICAL BULLETIN

Product Description
Templates rich in GC content or with significant secondary structure are often very difficult to amplify, and when subjected to PCR result in little or no product. Yield, specificity and consistency can be increased by the addition of enhancing agents in PCR amplification reactions. Polymer-Aide is an effective PCR enhancer for GC-rich templates.

Polymer-Aide is designated for molecular biology applications and has been tested for the presence of nuclease activity (RNase, DNase, and nickase).

Precautions and Disclaimer
Polymer-Aide is for R&D use only, not for drug, household or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Procedure
Preparation
Optimum addition will vary for each template. The typical effective reaction concentrations may range from 150 mM to 1.0 M. Polymer-Aide is supplied at an initial concentration of 10.8 M and will need to be diluted to the optimum concentration.

Reaction
The amplification of c-Jun serves to demonstrate the usefulness of Polymer-Aide for enhancing the amplification of difficult stretches of DNA. c-Jun is a 996 bp segment of human myeloid leukocyte with 64% GC content which does not amplify without enhancer supplementation.

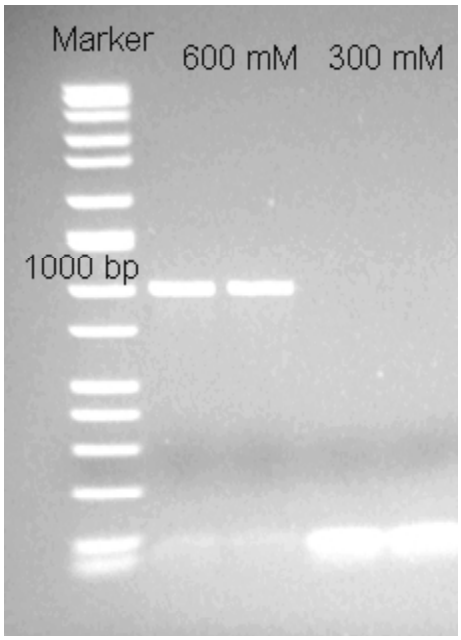
The following reagents were added to thin-walled PCR tube to amplify the c-Jun gene of human DNA. The 50 µl contained 1xPCR buffer, 2.0 mM (final) $MgCl_2$, 0.2 mM each dNTP, 0.4 µM each primer (sequences below) 0.4 ng human genomic DNA, 0.5 units/µl JumpStart™ Taq DNA Polymerase, and various levels of Polymer-Aide.

Primer Sequences
c-Jun primer j1: 5'-ATGACTGCAAAGATGGAAACG
c-Jun primer j2: 5'-TCAAAATGTTTGCAACTGCTGCG

Reactions were denatured at 94 °C for one minute; cycled 30 times using 92 °C for one minute, 57 °C for one minute, 72 °C for two minutes. A final five-minute extension at 72 °C was added at the end.

Results
Figure 1 shows amplification of c-Jun was enhanced by the presence of 600 mM Polymer-Aide (Lanes 2 & 3) but 300 mM was not sufficient to enhance the amplification.

Figure 1. Polymer-Aide enhanced c-Jun amplification
1% agarose gel



Lane 1: Wide Range DNA Marker
(Product No. D 7058: 50 – 10,000bp)
Lanes 2 & 3: 600 mM Polymer-Aide
Lanes 4 & 5: 300 mM Polymer-Aide

References

1. Chakrabarti, R., and Schutt, C. E., The enhancement of PCR amplification by low molecular weight amides. Nucleic Acids Res. **29,** 2377-81 (2001).
2. Chakrabarti, R., and Schutt, C. E., Novel Sulfoxides Facilitate GC-Rich Template Amplification. BioTechniques **32,** 866-874 (2002)

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