TaKaRa LA Taq® DNA Polymerase (Cat.# RR002A)

Application: Amplification of Long Fragments Using *TaKaRa Taq*™ and *TaKaRa LA Taq*® DNA Polymerase

TaKaRa LA Taq DNA Polymerase is optimized for amplification of long products, while *TaKaRa Taq* DNA polymerase is a conventional *Taq* enzyme. In this experiment, each enzyme was used for amplification of products up to 35 kb using λ DNA as template or up to 30.8 kb using human genomic DNA as template.

I. Amplification from λ DNA

Products ranging in size from 0.5 kb to 35 kb were amplified from λ DNA using the following PCR conditions:

Lanes 1-3:

94°C, 1 min
98°C, 5 sec. → 68°C, 5 min. x 30 cycles
72°C, 10 min

Lanes 4-12:

94°C, 1 min
98°C, 5 sec. → 68°C, 15 min. x 30 cycles
72°C, 10 min

After PCR, products were resolved on an agarose gel.

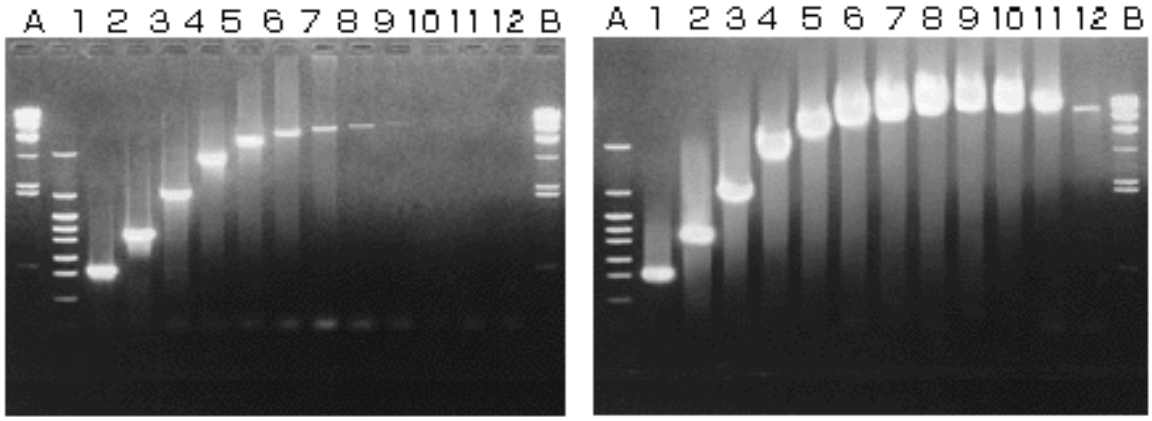

Figure 1. Amplification of fragments of various lengths from λ DNA using *Taq* (left panel) or *TaKaRa LA Taq* (right panel) DNA polymerase. Lanes A and B contain molecular weight markers (pHY marker and λ HindIII digest marker, respectively). Lanes 1 through 12 contain amplification products (1: 0.5 kb; 2: 1 kb; 3: 2 kb; 4: 4 kb; 5: 6 kb; 6: 8 kb; 7: 10 kb; 8: 12 kb; 9: 15 kb; 10: 20 kb; 11: 28 kb; 12: 35 kb).

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II. Amplification from human genomic DNA

Products ranging in size from 262 bp to 30.8 kb were amplified from human genomic DNA using the following PCR conditions:

Lane 1:

94°C, 1 min
94°C, 30 sec. → 58°C, 1 min. → 72°C, 1 min. x 30 cycles
72°C, 10 min

Lane 2:

94°C, 1 min
94°C, 30 sec. → 58°C, 1 min. → 72°C, 3 min. x 30 cycles
72°C, 10 min

Lanes 3-9:

94°C, 1 min
94°C, 30 sec. → 58°C, 15 min. x 30 cycles
72°C, 10 min

After PCR, products were resolved on an agarose gel.

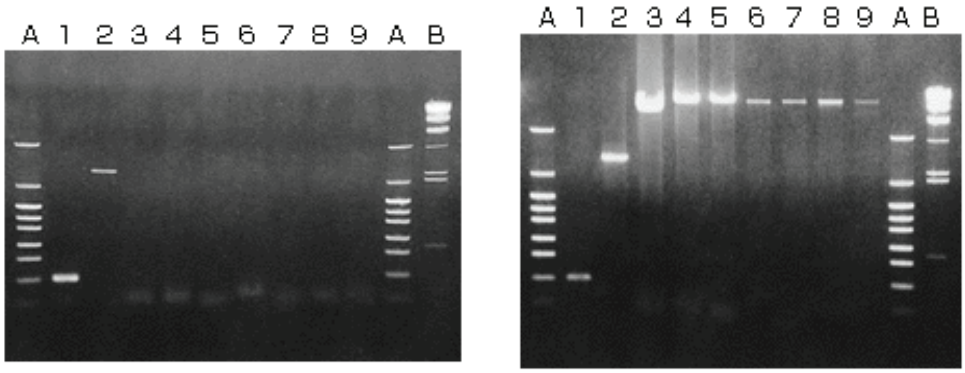

Figure 2. Amplification of fragments of various lengths from human genomic DNA using *Taq* (left panel) or *TaKaRa LA Taq* (right panel) DNA polymerase. Lanes A and B contain molecular weight markers (pHY marker and λ HindIII digest marker, respectively). Lanes 1 through 9 contain amplification products (1: 0.262 kb; 2: 2.9 kb; 3: 8.5 kb; 4: 17.5 kb; 5: 23.2 kb; 6: 27 kb; 7: 28.4 kb; 8: 29.9 kb; 9: 30.8 kb).

Conclusions

TaKaRa LA Taq DNA polymerase provided dramatically better amplification of long DNA fragments in comparison to standard Taq. For λ DNA, products ≤12 kb could be amplified and detected with *Taq*, whereas with *TaKaRa LA Taq* polymerase, high yields of products up to 35 kb could be obtained. Similarly, using human genomic DNA as a template, products ≤4 kb could be amplified and detected with Taq, whereas with *TaKaRa LA Taq*, products up to 30.8 kb were obtained.