

strands; DNA polymerase; deoxyribonucleoside triphosphate at the elongation temperature T2 bonding by action of the DNA polymerase with both of the first two single strands into which the first target nucleic acid has been dissociated and the second two single strands into which the second target nucleic acid has been dissociated; and a second target's probe at the annealing temperature T1 bonding with
 5 neither the first two single strands into which the first target nucleic acid has been dissociated nor the second two single strands into which the second target nucleic acid has been dissociated, the second target's probe at the second target detection temperature T3 bonding with the second two single strands into which the second target
 10 nucleic acid has been dissociated, the second target's probe including a second labeling substance changing second fluorescent signals thereof when the second target's probe specifically bonds with either of the second two single strands.

A second aspect of the present invention provides a detection method, comprising: using the kit for together detecting multiple target nucleic acids differing from each other as
 15 defined in the first aspect; a dissociating step of increasing temperature of the solution to the denaturation temperature T0 so as to dissociate the first target nucleic acid into the first two single strands, and to dissociate the second target nucleic acid into the second two single strands respectively; a first target nucleic acid detecting step of decreasing the temperature of the solution to the annealing temperature T1 so as to
 20 detect whether or not the first target nucleic acid is contained in the solution based on the first fluorescent signals shown by the first target's probe; an amplification step of setting up the temperature of the solution to the elongation temperature T2 so as to amplify the first two single strands into which the first target nucleic acid has been dissociated and the second two single strands into which the second target nucleic acid
 25 has been dissociated, respectively; and a second target nucleic acid detecting step of decreasing the temperature of the solution to the second target detection temperature T3 so as to detect whether or not the second target nucleic acid is contained in the solution

based on the second fluorescent signals shown by the second target's probe.

[0018]

It is preferable that each of the first labeling substance and the second labeling substance is selected from a group consisting of: a QProbe (registered trademark) probe;

5 an Eprobe (registered trademark) probe; and a TaqMan (registered trademark) probe.

[0019]

The fluorescent signals may be shown by quenching light when the annealing occurs. Alternatively, the fluorescent signals may be shown by emitting light when the annealing occurs.

10 [0020]

It is preferable that the first target nucleic acid is at least one of a *Mycoplasma pneumoniae* P1 gene and a *Chlamydia trachomatis* endogeneous plasmid gene, and the second target nucleic acid is at least one of internal control composition and a *Nisseria gonorrhoeae* CMT gene, respectively.

15 Effect of Invention

[0021]