ZGeneBio Fetal DNA in Maternal Plasma Extraction Kit

Cat# ZGCIR02-20/50 Size : **20, 50** Reactions

For concentration and purification of Fetal DNA from

Maternal plasma, serum or Urine

Contents:

Kit Contents

Fetal DNA in Maternal Plasma Extraction Kit	20RXN	50RXN
Binding Buffer	110 ml	260 ml
Nano Beads	450 ul	1100 ul
Proteinase K (20 ug/ml)	3.5 ml	8 ml
Wash Buffer I	18 ml	39 ml
Wash Buffer II	22 ml	52 ml
Elution Buffer	3 ml	6 ml

Storage

I. Free Circulating Nucleic Acid Extraction Kit can be stored at 15–25°C upon arrival and are stable for at least one year after delivery.

II. The kit contains a ready-to-use proteinase K solution, which is dissolved in a specially formulated storage buffer. The proteinase K is stable at room temperature (15–25°C). To prolong the lifetime of proteinase K, storage at 2–8°C is recommended

Introduction

Molecular analysis of plasma DNA during human pregnancy has led to the discovery that maternal plasma contains both fetal and maternal DNA. This valuable source of fetal DNA opens up new possibilities for noninvasive prenatal diagnosis. The detection of fetal DNA in maternal plasma is much simpler and more robust than detecting fetal nucleated cells in maternal blood, and does not require prior enrichment. During pregnancy, the fetal and maternal circulations are separated by the placental membranes. However, a variety of evidence has pointed toward the incompleteness of this barrier to cellular trafficking. Of special relevance to this review, fetal nucleated cells have been demonstrated in maternal circulation and have been widely pursued as potential substrates for noninvasive prenatal diagnosis Based on the high efficiency and specificity between nucleic acid and **ZGeneBio** beads. **ZGeneBio** developed the Fetal DNA Extraction Kit from Maternal plasma.

The maternal plasma and serum have been shown to contain fetal DNA. For plasma DNA detection, several recent studies addressed the need for careful evaluation and standardization of preanalytical processes. Key problems appear, such as possible contamination of plasma by white blood cells; the generally low and variable amount of free circulating DNA, making extraction/quantification difficult and time-consuming; poor DNA quality; and the presence of PCR inhibitors. In any case, automation of DNA extraction, which is a prerequisite for introduction of these diagnostic approaches in clinical laboratories, is difficult to achieve because of the volumes of plasma necessary to get sufficient DNA.

The **ZGeneBio Fetal DNA in Maternal Plasma Extraction Kit** is a simple, rapid method and time-saving process, which can be routinely used in laboratories. The entire procedure takes less than 1 hour as many as 12 samples can be handled in one cycle. It also enables efficient purification of these free circulating nucleic acids and provides high yields from human plasma or serum. The kit could starting sample volumes of up to 10 ml, and flexible elution volumes between 50 µl and 150 µl allow concentration of nucleic acid species that are present in low amounts in the sample material. The kit can also be used for purification and concentration of viral nucleic acids from large sample volumes.

Equipment and Reagents to Be Supplied by User

Shaker or rotor
50 ml centrifuge
Water bath or heating block
Ethanol (96–100%)*

Important Notice:

Preparation of buffers and reagents

Wash buffer I :
Add 6 ml ethanol (96–100%) to 20 reaction wash buffer I
or
Add 13 ml ethanol (96–100%) to 50 reaction wash buffer I

Protocols:

Extraction of Fetal DNA from Maternal
5 ml plasma, Serum or Urine:

1. Prepare 5 ml plasma or serum in 50 ml centrifuge tube, then add 5 ml binding buffer, 150 ul proteinase K and 20 ul nano beads, invert 5 times, then put on the shaker for 100 rpm 10min.

2. 1500 rpm 5min centrifuge. Then Discard the supernatant.

3. Add 1 ml wash buffer I to pipette beads complete, transfer to a 1.7 ml tube, 13000 rpm 1 min centrifuge, discard the supernatant.

4. Add 1 ml wash buffer II, pipette beads complete, 13000 rpm 1 min centrifuge, discard the supernatant.

5. After drawing all of wash buffer II off, 3 min at heat block 60C (keep lid open). Do not over dry.

6. Add 100 ul elution buffer vortex 20 sec and spin down then 60C water bath 10 min.

7. 14000 rpm 5 min centrifuge. Keep DNA solution for PCR ready.

Extraction of Fetal DNA from Maternal
10 ml plasma, Serum or Urine:

1. **Prepare 10 ml plasma or serum in 50 ml centrifuge tube, then add 10 ml binding buffer, 300 ul proteinase K and 30 ul nano beads, invert 5 times, then put on the shaker for 100 rpm 10min.**

2. **1500 rpm 5min centrifuge. Then Discard the supernatant.**

3. **Add 1 ml wash buffer I to pipette beads complete, transfer to a 1.7 ml tube, 13000 rpm 1 min centrifuge, discard the supernatant.**

4. **Add 1 ml wash buffer II, pipette beads complete, 13000 rpm 1 min centrifuge, discard the supernatant.**

5. **After drawing all of wash buffer II off, 3 min at heat block 60C (keep lid open). Do not over dry.**

6. **Add 150 ul elution buffer vortex 20 sec and spin down then 60C water bath 10 min.**

7. **14000 rpm 5 min centrifuge. Keep DNA solution for PCR ready.**

Ordering Information

ZGCIR05-20/50	Extraction of Fetal DNA from Maternal
ZGCIR05BD-20/50	Binding Buffer
ZGCIR05NB-20/50	Nano Beads
ZGPTSK-20	Proteinase K (20 ug/ml)
ZGCIR05WI-20/50	Wash Buffer I
ZGCIR05WII-20/50	Wash Buffer II
ZGCIR05EB-20/50	Elution Buffer

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