

Practical details...

BEFORE SENDING SAMPLES

Check gestational age conditions

- ≥ 8 weeks of gestation
(based on ultrasound report)
- ≥ 10 weeks of amenorrhoea

Inform laboratory
prior to dispatch :

+33.1.34.40.20.80
smgenetique@lab-cerba.com

SAMPLING OF MATERNAL BLOOD

- Collect whole blood (3 x 7 ml) on a serum tube with separating gel

- Leave 30 minutes at room temperature until complete clotting then centrifuge for 10 min at around 4000 rpm.

NEVER OPEN THE TUBES

The following documents **MUST BE** enclosed with all requests

- Ultrasound report (1st ultrasound dating: gestational age and number of foetuses)

- Test requisition form: "Fetal sex determination from maternal blood"

- Certificate of medical counseling and signed patient's informed consent.

Thanks to recent advances in molecular genetics, analyses may now be performed on circulating cell-free fetal DNA in maternal blood.

Pasteur Cerba has consequently extended its product range in human genetics to include a method for fetal RhD genotyping using maternal blood.

PREVENTION OF FOETOMATERNAL RhD ALLO-IMMUNIZATION

This condition concerns 150 000 pregnant women each year in France belonging to the rhesus-negative blood group, 2/3 of whom are carrying a rhesus-positive child.

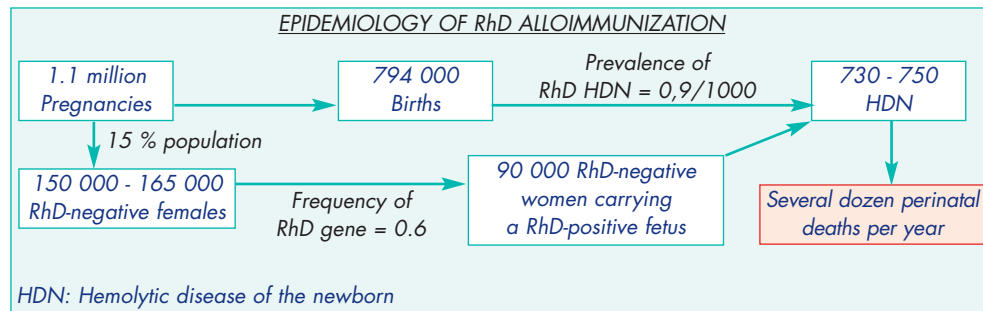
This blood group incompatibility between mother and infant can result in serious and potentially fatal fetal anemia.

This condition is currently prevented through routine administration of anti-D immunoglobulins prophylaxis to pregnant women*.

However, in 1/3 of cases, injection of this blood derivative is futile since both mother and infant are rhesus-negative.

Laboratoire Cerba now offers a non-invasive technique allowing early determination of fetal rhesus status that has been recommended since 2005 by the National College of French Gynecologists and Obstetricians.

*2005 Recommendation of the National College of French Gynecologists and Obstetricians.



Value of the test

This analysis allows evaluation of the risk of fetomaternal immunization with early identification of an authentic need for regular follow-up and injection of anti-D immunoglobulin, ensuring that only patients at risk receive treatment. The test is early, non-invasive, simple and rapid (result turnaround: 1 day).

Technical aspects

The test involves analysis of circulating cell-free fetal DNA extracted from a simple sample of maternal blood as of the second month of pregnancy (10 Weeks).

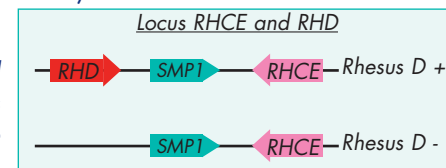
Principle

The proposed fetal RhD genotyping method is based on detection in maternal blood of a nucleotide sequence derived from the RhD gene (3'-terminal part). The analysis is based upon the fact that most rhesus-negative individuals do not carry the RhD gene while those in whom this gene is found are normally rhesus-positive.

The test is therefore valid in rhesus-negative patients whose genome contains no RhD, i.e. 99% of Caucasian subjects. Consequently, an RhD-negative genotype is a consistent indicator of rhesus-negative status.

Conclusion

This new non-invasive fetal RhD genotyping method may be used to avoid potentiation of alloimmunization through an unwarranted invasive procedure and is of particular interest for patients at risk (RhD-negative) in whom invasive procedures should in principle be avoided. Among subjects carrying a RhD-negative fetus, determination of fetal RhD genotype reduces monitoring requirements during pregnancy such as serological monitoring and anti-D immunoglobulin injections.



Costa JM, Giovangrandi Y, Ernault P, Lohmann L, Nataf V, El Halali N, Gautier E. Foetal RHD genotyping in maternal serum during the first trimester of pregnancy. Br J Haematol 2002; 119: 255-260.

Bianchi DW, Avent N, Costa JM, van der Schoot CE. Non invasive prenatal diagnosis of fetal rhesus D. Ready for prime(r) time. Obstet Gynecol 2005 ;106:841-4.

Gautier E, Benachi A, Giovangrandi Y, Ernault P, Olivi M, Gaillon T, Costa JM. Fetal RHD genotyping by maternal serum analysis : a two-year experience. Am J Obstet Gynecol 2005 ;192 :666-9.