

Investigation of Rh factor

Rh system is the second most important blood group system after ABO in humans. It consists of 6 alleles (C, c, D, d, E, e) - five of them are active (C, c, D, E, e) and may lead to the generation of specific antigens, since the last one (d) is inactive. The individual antigens of Rh system are assigned by 3 pairs of genes. Locations of Rh genes are situated on the chromosome so closely to each other, that they can't separate and inherit from generation to generation as a *gene complex*. During the phylogenesis, 8 combinations of genes were generated: cde, Cde, cdE, CdE, cDe, CDe, cDE a CDE.

In clinical investigation, presence or absence of **antigen D** on the red blood cells designates whether the blood is **Rh positive** (Rh⁺) or **Rh negative** (Rh⁻). Each antigen of Rh system may be detected by specific antiserum.

Distribution of Rh antigens in the population is variable and depends also on the race (in Caucasian population 85 % Rh⁺ and 15 % Rh⁻, in Afroamerican population 90-95 % Rh⁺). Occurrence of natural antibodies against Rh system (anti-D, -E a -C) is rare. **Antibodies against Rh system** are more frequently created in repeated transfusions and gravidities. Antibodies of IgG character (anti-D, -C, -CD, -c, -DE and E) may penetrate through the placenta and cause *hemolytic anemia of the neonates (fetal erythroblastosis)* or *post-transfusion hemolytic reactions*.

Material

Sterile injection needles for the single use, cotton wool, disinfection solution, slide with pits, diagnostic serum anti-Rh(D).

Methods

Place 1 drop of diagnostic serum anti-Rh(D) on the slide. Take little amount of capillary blood and mix it with the serum. Let it stand for 15 min. in the room temperature (18-25 °C) and read the result. Rh(D) positive red blood cells form obvious aggregates, while Rh(D) negative RBC remain dispersed.