Agglutination Reaction Encyclopedia Article

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Agglutination Reaction

Agglutination refers to the clumping of cells, such as bacteria or red blood cells, in the presence of an antibody. Because the clumping reaction occurs quickly and is easy to produce, agglutination is an important technique in diagnosis.

Two bacteriologists, Herbert Edward Durham (-1945) and Max von Gruber (1853-1927), discovered specific agglutination in 1896. The clumping became known as Gruber-Durham reaction. Gruber introduced the term agglutinin for any substance that caused agglutination of cells. (The word comes from the Latin *agglutinare*, "to glue to.")

French physician Fernand Widal (1862-1929) put Gruber and Durham's discovery to practical use later in 1896, using the reaction as the basis for a test for typhoid fever. Widal found that blood serum from a typhoid carrier caused a culture of typhoid bacteria to clump, whereas serum from a typhoid-free person did not. This Widal test was the first example of serum diagnosis.

Austrian physician Karl Landsteiner found another important practical application of the agglutination reaction in 1900. He was able to categorize human blood into four types, based on the clumping reaction of each type to blood serum. Landsteiner's agglutination tests made blood transfusion possible, since physicians could now avoid giving donor blood that would cause the recipient's blood to clump.