

# COMPARISON OF POLYCLONAL, MONOCLONAL AND RECOMBINANT ANTIBODIES

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**Introduction.** Antibodies are a powerful tool for pharmaceutical research and treatment of many viral diseases. They are used to precisely target specific proteins in cells and tissues, allowing for highly accurate analysis and detection. They also have potential applications in personalized medicine, as they can be specifically tailored to individual patients, allowing for safe and effective treatment. Monoclonal antibodies are being developed as therapeutic drugs, including for the treatment of cancer, and may prove to be an effective tool in the fight against a wide range of viral diseases.

**Aim of study.** The purpose of the study was to compare the main criteria that can distinguish the use of the three types of antibodies and to create a convenient scheme for quickly determining the advantages of producing each type of antibody.

**Materials and methods.** To search for scientific literature related to polyclonal, monoclonal, and recombinant antibodies, we used conventional academic databases such as Scopus, PubMed, Google Scholar, and Web of Science, as well as specialized literature on the topic. Our search yielded a large number of articles with different characteristics, which were compared to understand their differences and similarities.

**Results and discussion.** Antibodies have become one of the most important tools in life science research. Recently, more and more different variations of antibodies have been introduced with both therapeutic potential and great interest in terms of biomedical research. While simple in principle, antibodies are deceptively complex in structure and to produce. There are key distinctions between polyclonal, monoclonal, and recombinant antibody production that are important to consider when designing a product. Given that recombinant antibodies offer a number of significant advantages, monoclonal and polyclonal antibodies are still on the market and in demand. The results showed that all types of antibodies have different applications, production methods and costs, which allowed us to make a comprehensive comparison and create a suitable scheme from which we could draw certain conclusions about the criteria for using certain antibodies. We compared the materials in terms of production, time, cost, specificity and main disadvantages. As a result, we created a basic characterisation table for use by regular students.

**Conclusion.** Polyclonal antibodies are produced by immunising a host animal, whereas monoclonal antibodies are produced using hybridoma cells. Recombinant antibodies are produced by genetic engineering without the use of animals and are modified to be highly specific for a target protein. All three types of antibodies have different stability, cost and sensitivity, making them suitable for different purposes. Polyclonal antibodies have low cost and high sensitivity, while monoclonal antibodies often have higher cost but higher stability. Recombinant antibodies have better specificity but are often more expensive.