THE IMPORTANCE OF ENZYME IMMUNOASSAY IN THE DIAGNOSIS OF INFECTIOUS DISEASES

PhD ***Daminov Feruz Asadullayevich***
Assistant ***Nabieva Farangiz Sadriddinovna***
Clinical resident ***Abdusamadov Bobur Abdusamat O'g'li***
Department of Clinical and Laboratory Diagnostics with the Course of Clinical and Laboratory Diagnostics of the Faculty of Postgraduate EducationSamarkand State Medical University

Annotation. At this time, there is a huge problem of quick and accurate diagnosis of some diseases that pose a threat to the life and health of the entire population. The rapid and uncontrolled spread of infectious diseases can lead to the development of an epidemic or even a pandemic. The most important component of the fight against infectious diseases is their timely laboratory diagnosis, which includes enzyme immunoassay. This article discusses the range of areas used and the principle of the enzyme immunoassay.

Key words: enzyme immunoassay, ELISA, antigen, antibody, qualitative analysis, quantitative analysis.

Introduction

Enzyme immunoassay is a laboratory immunological method for the qualitative or quantitative determination of various compounds, macromolecules, viruses, etc., which is based on a specific antigen-antibody reaction. Enzyme immunoassay includes a number of successive stages, and the result itself can be assessed visually or by optical density [3, 9,14].

The process of enzyme-linked immunosorbent assay can be divided into three main stages: immunochemical process - the formation of an antigen-antibody complex attachment of a label to it and its visualization. The essence of ELISA is the specific interaction of an antibody and an antigen, followed by the addition of a conjugate (anti-species immunoglobulin labeled with an enzyme) to the resulting complex. The enzyme causes the chromogenic substrate to decompose to form a colored product that can be detected either visually or photometrically. Registration of the results of the reaction is carried out on special photometers with a vertical beam at a certain wavelength. The result is expressed in units of optical density [1, 4,15].

Among laboratory methods, ELISA is widely used in health care, various fields of agriculture, industrial biotechnology, environmental protection and research. [2,11,12].

Clinical examination of the population, epidemiological surveys, the presence of

drugs in the blood, the detection of poisoning, the determination of the content of medicinal compounds in tissues, viral diseases of plants, the determination of antibiotics, vitamins and other biologically active compounds in the selection of active strains-producers in industrial biotechnology, quality control of medicines from donor blood for the absence of viruses that cause AIDS and hepatitis B - this is just a small list of practical applications of enzyme immunoassay [7,13].

In the diagnosis of infectious diseases, enzyme immunoassay has the highest information content. The advantages of this method are the possibility of early diagnosis of infection, the ability to track the dynamics of the development of the process, speed and ease of use as an express test. Studies performed to detect pathogen antigens and specific antibodies to them in infections are available laboratory diagnostic methods. ELISA is used to diagnose viral, bacterial, fungal and parasitic infections. The method is also indispensable in the diagnosis of viral diseases, where direct methods of pathogen detection are difficult in addition, in some cases, serological studies remain the only method of screening for the diagnosis of infections, for example, toxoplasmosis, toxocariasis, trichinosis [6, 8, 10]. ELISA is also one of the most reliable modern methods of laboratory diagnosis of syphilis, HIV infections, and viral hepatitis [5,16,17].

Enzyme-linked immunosorbent assay is used in two directions: the detection of antibodies in the blood serum of the subject for diagnostic purposes and the determination of pathogen antigens to establish its genus or species. Given the dynamics of the synthesis of certain classes of immunoglobulins in the immune response, the presence of IgM antibodies indicates a primary acute infection, while the detection of only IgG marks a long-standing process or the presence of immunological memory without active disease. IgG also includes post-vaccination antibodies. The determination of specific IgA is informative for further control of the cure of the disease, because IgA, having a short half-life, disappear from the circulation after successful treatment for two weeks. The avidity of IgG antibodies makes it possible to judge the duration of infection, which is especially important when screening pregnant women for intrauterine infections.

Conclusion. Based on the foregoing, enzyme immunoassay is one of the most sensitive, specific, reproducible, clinically informative and publicly available methods of laboratory research. Proper application of this method can significantly expand the diagnostic capabilities of medical laboratories.

BIBLIOGRAPHY:

1. Antsilevich L.M., Yagudina L.A. Practical application of enzyme immunoassay in the diagnosis of diseases // Practical Medicine. 3 (79) July 2014 - 28 p. (In russian).

2. Bai Y. et al. Application of a IgA-ELISA method for differentiation of Mycoplasma hyopneumoniae infected from vaccinated pigs //Veterinary microbiology. -2018. -T. 223. -C. 86-92.

3. Berdiyarova Sh.Sh., Yusupova N.A., Murtazaeva N.K., Ibragimova N.S. Clinical and laboratory features of chronic hematogenic osteomyelitis//TJM - Tematics journal of Microbiology ISSN 2277-2952 Vol-6-Issue-1-2022, P. 36 – 43. (In russian).

4. Erkinovna K. Z., Berdirasulovich K. G., Andreevna Y. I. The importance of some laboratory indicators in lung diseases //Вестник науки и образования. – 2020. – №. 22-2 (100). – С. 70-72.

5. Gu K. et al. Development of nanobody-horseradish peroxidase-based sandwich ELISA to detect Salmonella Enteritidis in milk and in vivo colonization in chicken //Journal of nanobiotechnology. -2022. -T. 20. -№. 1. -C. 1-18.

6. Hosseini S. et al. Enzyme-linked immunosorbent assay (ELISA): from A to Z. -Singapore: Springer, 2018.

7. IN Sabirovna, IB Fikriyevich, BS Shukurullayevna Clinical picture of hypoxic-ischemic encephalopathy in newborn with different gestation date - Thematics Journal of Microbiology, 6 (1), 2022

8. O'G T. F. O. K. et al. Assessment of carbohydrate metabolism in patients with diabetes and COVID-19 //Research Focus. – 2022. – Т. 1. – №. 4. – С. 52-55.

9. Kuvandikov G.B., Kudratova Z.E., Yusupova N.A., Berdiyarova Sh.Sh. Problems of reliability of the results of laboratory diagnostics of sexually transmitted infections // European research: innovation in science, education and technology, 79-82, 2020. (In russian).

10. Nabieva F.S., Ibragimova N.S., Bobokulov O.O. / The use of Saccharomyces cerevisiae to obtain conjugates for ELISA // Journal of Biomedicine and Practice, -2022 - Volume 7 No. 3, pp. 424-430. (In russian).

11. Nabieva F.S., Ibragimova N.S., Umarova S.S. Instrumental and laboratory research methods for the early diagnosis of echinococcosis // Bulletin of Science and Education, No. 24 (78). Part 4. 2020. (In russian).

12. Seisenbaeva M. S., Koshemetov Zh. K., Sandybaev N. T., Nurabaev S. Sh., Matveeva V. M., Bogdanova M. I., Sugirbaeva G. D. Preparation of diagnostic preparations for enzyme immunoassay in order to identify the antigen of the causative agent of pasteurellosis // Topical issues of veterinary biology No. 1 (21). 2014 - 33 p. (In russian).

13. Даминов Ф. А. и др. Хирургическая тактика лечения диффузно-

токсического зоба //Академический журнал Западной Сибири. – 2013. – Т. 9. – №. 1. – С. 21-21.

14. Даминов Ф. А. и др. Особенности лечебного питания для ранней профилактики желудочнокишечных осложнений у обожженных //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021. – №. S1. – С. 21-

15. Кудратова З. Э. и др. АТИПИК МИКРОФЛОРА ЭТИОЛОГИЯЛИ Ў ТКИР ОБСТРУКТИВ БРОНХИТЛАРИНИНГ Ў ЗИГА ХОС КЛИНИК КЕЧИШИ //Research Focus. – 2022. – Т. 1. – №. 4. – С. 23-32.

16. НА Юсупова, ШШ Бердиярова, ИА Юлаева, КЛИНИКО-ЛАБОРАТОРНЫЕ ПОКАЗАТЕЛИ У ДЕТЕЙ С МОЧЕКАМЕННОЙ БОЛЕЗНЬЮ И КАЧЕСТВО ЛАБОРАТОРНЫХ ИССЛЕДОВАНИЙ В ЭТАПЕ СТАЦИОНАРНОГО ЛЕЧЕНИЯ.

17. Юсупова Н. А., Бердиярова Ш. Ш., Юлаева И. А. ГЕМАТОЛОГИЧЕСКИЕ ХАРАКТЕРИСТИКИ ФАКТОРОВ РИСКА И ОЦЕНКА ПРОГНОЗА ПРИ COVID-19 //Вестник науки и образования. – 2021. – №. 5-2 (108). – С. 25-29.