

Instructional methodological class. An experience in the Physiological Sciences of Guantánamo. Cuba

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SUMMARY

The methodological class is the type of teaching-methodological work that, through demonstration, argumentation and analysis, guides teachers on some aspects of a methodological nature that contribute to their preparation for the implementation of the educational process. The class can be of a demonstrative or instructive nature, and will respond to the methodological objectives formulated. The importance of the methodological teaching class for young teachers of the Basic Sciences in particular and from the assumption that the classes are classified on the basis of the objectives to be achieved and their main types are: the lecture, the practical class, the seminar, the meeting class, the laboratory practice and the workshop. The methodological conceptual problem was taken into account: Insufficiencies that are manifested in the young faculty of the faculty in the methodological structuring that requires the delivery of a laboratory practice. General Methodological Objective: To instruct young faculty members in the methodological structure that requires the delivery of a laboratory practice. When considering the relevance of the instructional methodological class it is praiseworthy to share the experience of an instructional methodological class from a laboratory practice, specifically related to the subject: Blood and Immune System.

Keywords: class, methodological, instructive, practice, laboratory, blood.

INTRODUCTION

The methodological work is the work that, supported in the Didactics, the subjects involved in the educational teaching process, in order to achieve optimal results in this process, prioritizing the educational work from the instruction, to fully meet the objectives formulated in the study plans.

The main functions of methodological work are planning, organization, regulation and control of the educational process. The adequate performance of these functions by the professors, the managerial staff and the process support guarantees their efficient development.

The fundamental forms of methodological work are:

- a) Teaching-methodological.
- b) Scientific-methodological.

The fundamental types of teaching-methodological work are:

- a) Methodological teaching meeting.
- b) Methodological class.
- c) Open class.
- d) Class of verification.
- e) Methodological teaching workshop. Other types can be included ...

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Types of Methodological Classes:

- a) Demonstrative: The leader of the activity and the teachers of the department are located in the situation of a classroom. Teachers can assume the role of students or can be done with students and the rest of the teachers observe.
- b) Instructive: It presupposes an in-depth analysis of the program or plan (s) of class (s) in light of the objective and the selected methodological problem. Depending on the degree of generality of the problem selected, the instructional methodological class can be of different types:
 - Where a class plan is explained
 - Of a class system (or part of it) of a program theme.
 - Where the methodological treatment of a topic or part of it is addressed

- Where the relationship of methodological components is dealt with through a theme (Example: relation of objectives with the evaluation through a theme or part of it).

The class is one of the organizational forms of teaching work, which has as objectives the acquisition of knowledge, the development of skills and the formation of values and cognitive and professional interests in students, through the realization of activities of an essentially academic nature.

Classes are classified on the basis of the objectives to be achieved and their main types are: the conference, the practical class, the seminar, the meeting class, the laboratory practice and the workshop.

It is important to note that the Instructional Methodology Class has the following structure:

*I. **Introduction:** At the beginning of the class where all the teachers of the Department participate, the methodological objectives, importance of the topic and the selected conceptual-methodological problem are expressed to the group of professors. You can also communicate what bibliography was used for its preparation as this helps to update the professional knowledge of teachers.*

*II. **Development:** The same is summarized in:*

- *Explanation and analysis of the matter, which will lead to a correct orientation of the audience towards the proposed methodological objectives*
- *Demonstrations linked to explanations*
- *Exchange with the audience to get the best out of the methodological guidelines offered in the class*
- *Scientific and methodological update of the person who teaches it.*

*III. **Conclusions:** They must respond to the methodological objective and its agreement with the selected conceptual-methodological aspect. Conclusions may arise in accordance with the exchange with the audience that should be included. In general, the orientations of greater generalizing value for the collective must be specified.*

Methodological conceptual problem

Insufficiencies that are manifested in the teaching faculty novel in the methodological structure that requires the delivery of a laboratory practice in the subject Blood and Immunity

General Methodological Objective

To instruct the new teachers about the methodological structure that in the didactic procedures allows to plan, guide and control a Laboratory Practice of the subject Blood and Immunity, to elevate the results of the educational teaching process.

Developing

The laboratory practice is the type of class that aims to: students acquire the skills of the methods and techniques of work and scientific research; expand, deepen, consolidate, generalize and verify the theoretical foundations of the subject or discipline through experimentation, using the necessary means

Career: Medicine **Year:** 2nd **Semester:** First **Course:** 2018-2019

Subject. Blood and immune system

Title. Evidence of the antigen-antibody interaction by agglutination. Determination of ABO and Rh blood groups

Form of Organization of the Teaching: Laboratory practice

Goals

1. Observe the Ag-Ac interaction through agglutination taking into account the characteristics of Ag and Ac.
2. Interpret the results of the tests carried out taking into account the composition of the ABO and Rh systems and the characteristics of the reactants.

Summary

- Evidence of the Ag-Ac interaction. Agglutination reaction.
- Characteristics of the reactants.
- Classification of agglutination reactions.
- Advantages of the tests based on agglutination reactions.
- Application of agglutination reactions.
- Determination of ABO and Rh blood groups as an example of agglutination reaction. Its interpretation and application.

Method. Participatory scientific observation.

Teaching Media PNO (operational normative procedures), Blackboard, textbook, complementary bibliography.

Duration. 90 minutes

The Professor in the introduction of the activity should make a reminder of the fundamental aspects of the corresponding conference, eg. In the study of the human immune system, immunological methods are used whose development is based on the application of the structure and functioning of different components of the system. They are used for diagnosis in the identification of substances in fluids (urine, saliva, serum, plasma, cerebrospinal fluid, semen, vaginal secretions, among others); in the evaluation of therapies and establishment of prognoses; in prevention to characterize populations to immunize and evaluate vaccine efficacy; in the evaluation of productive processes of biomolecules; for experimentation.

An important group of study methods is based on the interaction of the antigen (Ag) and the specific antibody (Ac). The exquisite specificity of an Ac for the Ag that motivated its origin makes them true reactants.

The study of Ag and Ac interaction does not necessarily have to be related to disease, it can be applied to evaluate the health status of an individual.

How can we demonstrate that interaction?

Similar to how it happens in chemical reactions, when the reactants interact in an immune reaction mediated by specific Ag and Ac, physical phenomena that show the interaction are manifested.

In chemical reactions we can observe color changes, gas detachments, formation of precipitates, heat release, among other phenomena.

In the immune reactions can also be observed the formation of precipitates, the agglutination of particles, the neutralization of functions among other evidences.

Agglutination reactions

The agglutination reactions are the evidence that the interaction of Ag that are part of or are artificially coupled to a particle with its specific Ac has occurred.

Tests based on agglutination reactions have been widely used for ease of execution, low costs and sensitivity

In professional practice, the most commonly used test is the typing of blood groups. Since the early twentieth century (1901) Landstainer described the ABO antigen system and later in 1940, with other collaborators, published the existence of Rh Ag

The ABO antigen system is genetically encoded and groups humans into four fundamental groups: Individuals who have antigen A carry antibodies against antigen B (anti-B) in their serum; those with B antigen carry antibodies against antigen A (anti-A) in their serum; those that have antigen A and B do not carry in their anti-A or anti-B serum and those that do not have antigen A and B carry in their anti-A and anti-B serum.

The individuals that have antigen A are subdivided into two subgroups: A1 and A2 so that in reality there are 6 groups: A1, A2, B, A1B, A2B and O.

In the third decade of the last century it was determined that the ABO system is inherited following Mendelian patterns, so its usefulness extends to anthropological and legal studies regarding identity and unknown paternity.

Three genes are responsible for the inheritance of blood groups: A, B and O. Gene A has two ways of expressing itself (alleles A1 and A2).

The Rh system is determined by alelomorphic genes that code for different substances (C, c, D, E, e).

Of these, only the presence or absence of substance D (as Rh antigen) is identified with the anti-D antibody.

Corresponding individuals are classified as Rh + if they have the Ag D and Rh- when they do not possess it.

During the development of the methodological class, the teacher who directs the activity should draw attention to young teachers on this important aspect

When they are in front of students, that the evaluation of learning in their instructional action helps students to create adequate study habits and favors the increase of their cognitive activity.

In its educational action, it contributes, among other aspects, to developing in students the responsibility for study, diligence, honesty, solidarity, critical and self-critical spirit. They can, for example, donate the blood they are called to. FEU and the CDRs in your community.

The development of the laboratory practice implies an interaction and a sustained exchange in the words of the teacher and in the making of the students

Determination of ABO and RH blood groups

It is of great importance that each member of the community knows the blood group to which it belongs and that this information is available in the closest belongings.

In case you require blood transfusion, this information can save a life.

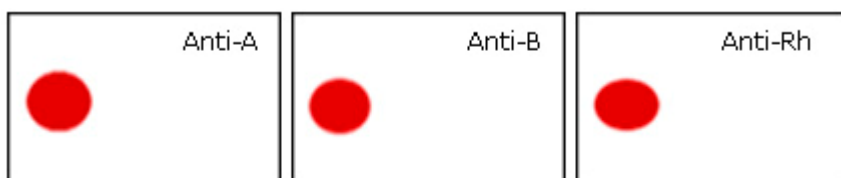
It also applies in organ and tissue transplant protocols

In the particular case of the Rh-woman, it is necessary to take into account the prophylaxis against any pregnancy (that comes to term or not) of a Rh + couple to avoid the induction of immune response by natural way or by means of transfusions.

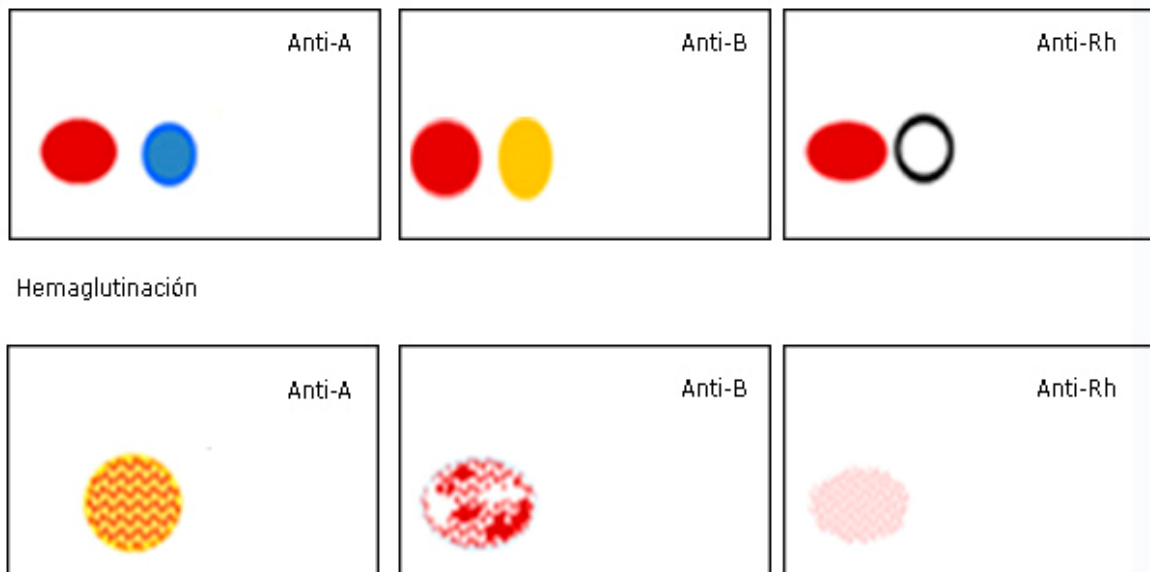
It is important that the junior teacher takes into account that the individual work of the students in the execution of the planned tasks must be guaranteed.

Method

- Extract blood by venous or digital puncture and place in a tube. Let the clot retract.
- Mark 3 slides with the anti-A, anti-B and anti-D labels for each blood sample under study and place a drop of the globules that were not trapped in the clot in each of the 3.



- Place one drop of each sorting serum as appropriate near the drop of globules and with separate applicators mix and then perform rotary movements with your hand.



Test of Coombs

The agglutination is evidenced with greater or lesser clarity in correspondence with the class of immunoglobulin that participates.

IgG is the only immunoglobulin that crosses placenta and in case of maternal immunization with the production of anti-D, these antibodies pass to the fetus and when they join the fetal erythrocyte trigger the haemolytic disease of the newborn or fetal erythroblastosis. When the fetal blood is analyzed there is no evidence of agglutination with the naked eye, unless the method designed by Coombs is used: adding Coombs serum (anti-human immunoglobulin serum obtained in another species (rabbit, rat, sheep, etc.).

The conclusions of the laboratory practice should be made once the students have finished the analysis and interpretations

Summary of the experiments taking into account for each of them:

- Observation of the results
- Interpretation of these results
- Conclusions
- Explain the importance of the experiment in medical practice.

CONCLUSIONS

The methodological class allowed instructing the new teachers:

- In the methodological structure of laboratory practices.
- In the skills related to laboratory practices that students must develop.

- In the way in which these skills should be evaluated.

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