

# HOW TO PREPARE A SCIENTIFIC POSTER?

The presentation of research results through a poster is one of the most common ways used by scientists. During the congress, the posters are displayed in an area of the venue for the meeting attendees to read.

- The dimensions of the poster should be A0 84.1 cm wide and 118.9 cm high.
- The font size should be legible from a distance

MINIMUM TEXT SIZE (IN POINTS)
• TITLE (72)
• AUTHORS AND COORDINATING TEACHER (37)
• CENTER POSTAL DATA, E-MAIL, TEACHER (29)
• REMAINDERS OF TEXTS (26)

The most common program to make the poster is PowerPoint.

- Once the poster has been assembled, it should be printed on a reprographic printer.
  - It should have a structure organized by the following sections: Introduction, materials and methods, results, conclusions, bibliography and acknowledgements.
  - The bibliography can be included or not, it is optional. If it is decided to include references, the most important ones should be selected.
- The section to acknowledge contributions, financing, may also include conflicts of interest, if any. In any case, it should not exceed 20-30 words.

**Title**

**Logos.** Logos of the congress, projects involved, research centers and the IES of the participating students should be included.

**Introduction.** Synthesis of the problem to be solved and scientific contribution of the work.

**Results and discussion.** The most important data are presented, which should be accompanied by photographs, graphs and tables, etc. In order to make the presentation as clear as possible.

**Acknowledgments** to the entities that have financed and to the people who have made it possible to carry out the research work.

**Names of authors and centers to which they belong**

**Objectives** to be achieved with the research

**Materials and methods.** The materials used in the investigation should be mentioned and a brief description of the experimental procedure should be given.

**Images and tables**

**Conclusions.** Justified with the data of the work. This section is the essence of the work being presented. In fact, many attendees read the title and immediately go to the conclusions

**Poster Content:**

**TITLE:** ANALYSIS OF HYGIENIC QUALITY IN DIFFERENT TYPES OF MILK

**Logos:** FIDIciencia, Junta de Andalucía, I.E.S. FIDIANA

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**INTRODUCTION:** Milk is a product that is usually consumed daily, due to its quality it is important to know which one to choose. Depending on the process used for the industrialization of the product, the number of bacteria it contains may vary. The less bacteria present in the milk, the higher its quality and durability. In this research we will make an approximation to the amount of reductase enzymes in the different varieties of milk according to the process to which it has been subjected for its consumption.

**OBJECTIVES:** Check the amount of bacteria according to the presence of reductase enzymes, by indirect measurement of the reduction time of methylene blue, in various types of milk according to the industrialization process. Check the hygienic quality of pasteurized, raw, sterilized, evaporated, uperized milk, with animal welfare certificate and colostrum.

**MATERIALS:** Laboratory material: -10 falcon type test tubes, -Rack, -Cultivation stove, -Pipettes of 1 ml and 5 ml, -Aluminium foil, -Reagents, -Methylene blue alcoholic solution, -Biological material, -Different types of milk: -Raw, sterilized, pasteurized, uperized and evaporated milk, -Whole milk, semi-skimmed and skimmed

**METHODS:** 1. Methylene blue solution was prepared: diluting one gram of methylene blue in 100 ml of alcohol. 2. 10 ml of the milk was made into test tubes and labeled. 3. 0.5 ml of methylene blue was added. 4. The test tubes were wrapped in aluminium foil. 5. They were incubated in a stove at 37 °C until the disappearance of the blue color.

**RESULTS:** From the results of graph 1, we deduce that colostrum has the most bacteria, since it is natural milk that has not been subjected to preservation treatments, taking 10 minutes for its bacteria to make the methylene blue disappear completely; however, if we look at pasteurized milk, we see how the dye lasts for 2520 minutes, since it has much less bacteria. From the reference values shown in table 1, a good quality milk, with a bacterial population of 100,000-200,000 bacteria per ml, has a discoloration time of 300 min. In our case, all types of milk had longer times, except colostrum. In graph 2 it is clear that there is not so much difference in time, but even so, we can see a lot of differences between whole and skimmed milk. It can be seen that the more fat the milk contains, the less bacteria it contains, which is why the blue colour lasts longer in whole milk, and less in skimmed milk. All types of milk are included in good quality milks (table 1). In graph 3, the presence of fat in the animal welfare milks does not affect the hygienic quality of the milk. Semi-skimmed milk with animal welfare contains the fewest number of bacteria and whole milk with animal welfare contains the highest. In all types of milk tested, the discoloration time was longer than 300 minutes, indicating good quality.

Milk quality	Discoloration time	Estimated number of bacteria per ml
Good quality	300 min	100.000-200.000
Moderate quality	120-240 min	200.000-2.000.000
Poor quality	>120 min	>2.000.000

**Table 1. Reference values for milk discoloration time**

**Graph 1: Effect of the type of storage of milk**

**Graph 2: Effect of nutritional content**

**Graph 3: Effect of animal welfare**

**CONCLUSIONS:** 1.- In general, the Spanish milks tested, and commonly used for human consumption, are of high quality, as in no case did we find a discoloration time of less than 120 minutes. This indicates that their bacterial population is lower than 100.000-200.000 bacteria/ml. Only the colostrum was of poor hygienic quality, which is consistent with the fact that it has not been subjected to any preservation treatment. 2.- The nutritional fat content affects the development of bacteria in the milk, with a higher bacterial development in skimmed milk and a lower bacterial load in whole milk. Nevertheless, all three types of milk have good hygienic quality. Animal welfare certification does not seem to have an effect on the hygienic quality of the milk.

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