

# Pig Sample Handling in Laboratory Scale

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## ABSTRACT

Laboratory is enclosed space, a room or an outdoor as experiment and research place. How to handling sample is an important knowledge in laboratory especially pig sample. Such sample is not only haram but also najis, so it requires special treatment. Up to the present, there is still no clear procedure to handle pig sample properly in the laboratory. This study aimed to design proper procedures in handling pig sample for laboratory scale. We used a literature study and discussion with some stakeholders to gather information in order to generate insights for designing the procedure. The results include laboratory layout, organizing laboratory management, and retrieval techniques as well as handling procedure for the sample are proposed. In general, handling pig samples on a laboratory scale must be done with extra caution, detail, and aseptism

**Keywords:** aseptis, halal, handling, laboratory, pig samples

## 1. Introduction

The laboratory designed to do some activities such as education function, research and community service. The activities supported by the existence of an infrastructure to get optimal results. Laboratory management have a Head assisted by laboratory assistants for each laboratory room (Tone, 2007). According to Amna (2014) there is the role and function of laboratory are three, it is learning, experiments, and research. Laboratories are very important for science development and renewal. Various findings are obtained from research activities and can be applied to the community. Laboratories located in various places such as universities, hospitals, research institutions, industrial sites and others, need to be informed of research.

Research in the laboratory has operational standards in using tools and materials, some of which have critical points that must be attended. Knowledge of laboratory management both directly and indirectly is mandatory for laboratory users to minimize hazards and contamination.

One of important knowledge of laboratory management is handling sample management. Each sample could be managing for keeping from contamination. A hazard in handling a sample may spread the dangerous of microorganisms, disease or even samples that are haram. Management of samples, especially samples of unclean ingredients which are haram and najis sample, will become a problem if it doesn't have managing properly.

Recently there has been a lot of research on halal products. At present, halal is a global problem, many non-Islamic countries are importers of various types of products for Muslim countries. In addition, they

provide halal products for Muslim tourists who come to their country. In fact, many people from non-Muslim communities consume halal products for their needs such as health and safety (Nurrachmi, 2017; Denyinghot, et al., 2017; Nakyinsige et al., 2012; Hidayat, 2015). These factors make halal products as one of the important issues that are heavily studied in various countries, and so many research in laboratory scale are advanced.

Halal-base research beginning from anxiety public from unclean material contamination. On the other hand there is crucial problem with the halal research, i.e pig sample. Beside of that haram, pig is one of najis for muslim, there is a special management in handling pig sample for holding spread of contamination.

Pig is a type of ungulate animal with long or lobe nose, the animals originally from Eurasia. Sometimes also referred to as khinzir (Arabic). Pigs are omnivores, which means they consume both meat and plants. In addition, pigs are one of the mammals that almost all of their bodies can be utilized. Some of the bad qualities of pigs like, the most greedy and dirty animals in the class. Then the greed is unmatched by other animals, and likes to eat the carcass and its own feces; and they ate human waste. (Arifin, 2014).

In research related with pig sample, there are no laboratory operational standards or studies that specifically discuss the technique of handling it. This is very urgent that pig samples need careful and detail handling, no more contamination, equipment and other materials in the laboratory. The fatwa of MUI based on Qaidah fihiyyah, it explains that "If there is a thing, mixed between halal and haram, then haram wins". For this reason, it is necessary to conduct a study on how to handle pig in laboratory scale then could it become one of references in pig handling on laboratory scale.

## 2. Materials and methods

The materials are literature sources such as research journals, research data and books that support the information of this paper. The method used is descriptive method, discussion and study.

## 3. Result and discussion

Laboratory management is important according to the purpose of its procurement. Laboratory management includes activities of regulate, maintain, and effort for safety of laboratory users. A bad management of laboratory caused various problems that prevent laboratory users from carrying out research. According to Anggraeni (2013) these problems include structuring the layout of laboratory space that is not appropriate. A tidy inventory list caused undisciplined in using tools and materials; a bad laboratory managers who doesn't worked optimally lacking safety procedures in the laboratory. And one of the most important is handling various samples used in laboratory research.

Pig sample handling should be done in a specific room such as holding room for halal study research. This is intended for keeping in spread of contamination to other laboratory components. Pig sample handling could be a special attention for its tool management and infrastructure including the layout of the laboratory space, organizing laboratory management which includes administration of tools and materials as well as management of work safety in the laboratory. and the main thing for pig sample handling in more detail are as follows:

### a. Laboratory Layout

Laboratory is a complex room because there are many factors that must be considered in the manufacturing process. Pig sample handling should consider matters that can reduce the risk of contamination such as the location of the laboratory, distance from other spaces, access to use waste disposal or sample burial, and the condition of the room. According to Anggraeni (2013), factors that need to be considered in laboratory layouts include the location of laboratory buildings and the size of space. Building location requirements are not located in the direction of the wind leading to settlement or other building, this is avoid the spread contamination by air; building are not built at the water sources and far away from other laboratories; and they must be easy to reach for control and facilitate other actions.

Handling pig samples requires preparation space and storage space. These rooms have different functions: Preparation rooms are used for the preparation of tools and materials to be used in maintenance and experiments; and storage space used to avoid tools and materials. In addition, there must be a special room for storing pig samples such as special coolers to put pork samples into the freezer. This is based on consideration of the safety of various laboratory equipments and the

convenience of laboratory users.

Supporting facilities are needed for laboratories specifically for pig samples, such as public facilities and specific facilities that are permanent in one place and will not be transferred to another laboratory. According to Wirjosoemarto et al (2004), it is explained that public facilities are facilities that can be used by all laboratory users such as lighting, ventilation, water, sinks, electricity, and gas. While special facilities in the form of equipment and furniture include user desks, material tables, chairs, blackboards, tool cabinets, material cabinets, first aid kits, firefighters, etc.

One of the crucial things is the washing place for the tools commonly used to support research, with at least two water channels recommended. The first place is used specifically for tools that has been a direct contact with pig sample. and the second place are for tools that never direct contact with pig sample. This will minimize contamination with other tools in one laboratory.

### b. Organizing Laboratory Management

This context discusses the organization of managers, users and general rules of specific laboratory for pig sample handling that are important to know. The ability of managers and users to manage components in the laboratory is very important aspect. It is necessary for keeping managerial work in line. It takes people who are highly dedicated and has a special competencies to become a manager and laboratory user specifically for pig sample handling, and professional the laboratory.

One part of its management is archival equipment management tools and materials. Recording and grouping tools and materials according to their types are needed for tools and materials used constantly. An inventory book of specific tools and materials for the data collection process is necessary. Storing location based on the function and its benefit is one important things for carrying out easily and reduce contamination of pig due to the touch of the hand.

In addition to reducing contamination, the archival equipment management process affects safety factors of work in the laboratory which causes amount of fatal accidents during laboratory user don't know yet about the safety procedures. Archival equipment management of tools and materials makes laboratory users easily to prevent any hazard component. Therefore, in specific laboratory for pig sample there are needed a safety instructions contain warning, instructions and prohibitions without exclude first aid kits, fire extinguishers as a work safety standard laboratory.

### c. Techniques for Collecting and Handling the pig sample in the Laboratory

The technique of taking and handling pork samples

was adopted from the Ministry of Health of the Republic of Indonesia Directorate General of Disease Control and Environmental Health in 2013 regarding Specimen Collection Guidelines and Laboratory Examinations. The first thing to do is to take and send specimens before they are collected, universal precautions for taking specimens to prevent environmental contamination. Direct contamination during pigs sampling can be avoided by keeping no contact with the sample. Those are:

1. Washing hands using a soap or disinfectant before and after the experiment.
2. Using Personal Protective Equipment (PPE), the minimum that must be used:
  - a. Comfortable clothes
  - b. Rubber gloves
  - c. Disposable mask
3. Sampling tools and materials:
  - a. Sample bag
  - b. Ice pack and Cold Box
  - c. Name label
  - d. Scissor
  - e. Specimen Collection Form

Samples taken must arrive in the laboratory immediately after taking. Handling samples appropriately when shipping is of the utmost importance. It is strongly recommended that when sending specimens are placed in the cool box. After arriving at the laboratory, keep the sample in the -20°C freezer with a separate place from the other samples.

#### d. Handling in the Laboratory

Pig sample as research objects in the laboratory can consist of any part such as blood, serum, faeces, plasma, urine, phlegm, feathers, nails, and others. Wet samples that are susceptible to microbial growth and other biological disturbances occur, the next step to prevent those things are needed the sample keep in dry and storing in a cooler with a minimum temperature of -20°C to maintain the sample state until the DNA level remains good. This is an option because usually the sample experiences delays for certain reasons such as research that is difficult, gradual, and requires a long time span. Things that must be considered are as follows:

1. It is not permissible to allow this pig sample to be exposed to the air in an open container without cover
2. It is not permissible to store samples of pork in a place mixed with other ingredients. Use coolers, containers, handling equipment and even special bases for pig.
3. When checking the pork samples, it is not permissible to take action without wearing a laboratory coat, gloves and complete PPE.
4. Pig sample handling is always close to the water source where washing dirty tools specifically for pig samples so that it is easy to store the tools that have been used so that they are not scattered.
5. Check the pig sample properly in a few hours after

taking to determine whether the storage and protection are in accordance with the initial position. If you get specimens at the same time, place the sample neatly in the cooler with the position of the pig sample to be used in the easiest position to reach.

In general, pig sample handling in research laboratory must be done with extra caution, detail, and aseptic condition. This pig sample is highly risky if doesn't has a right handling. The risk here refers to haram and it's najis for muslim.

#### 4. Conclusion

Pig sample handling in research laboratory must be addressed includes laboratory layout, organizing laboratory management, and taking and handling the pig sample in the laboratory. In general, pig sample handling must be done with extra caution, detail, and asepticism.

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