



ANKARA UNIVERSITY
FACULTY OF VETERINARY MEDICINE
DEPARTMENT OF ANATOMY



Air Drying, Freeze Drying and Natural Drying Techniques

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Drying Technique for The Preparation of Anatomic Specimens

- Drying technique is one of the oldest methods used to prepare anatomical specimens. Not only for the anatomy but also for various industrial fields.
- Various samples can be seen in different fields. Such as fisheries, museums, restaurants and massive food industry.
- The main purpose for drying is to reduce the body fluids below 2%. Therefore bacterial activity (decomposition or putrification) would be delayed.
- Mummification (or embalming in some references) is actually the result of drying in this way.



Air-Drying Technique

- Preparation and preservation of hollow (luminal) organs, such as stomach, intestines etc., by injection of standardized and continuous air into the specimens.
- After a while, this continuous air will remove (dry) the tissue fluids in the samples.
- Specimens will be stabilized in their natural form and locations.
- Continuous air pumping unit. Industrial aquarium pump, refrigerator engine, vacuum pump for 24 hours a day.
- One opening for the air entrance and one for the exit of excess air.
- Various samples such as lungs, snakes etc.
- This process can take 1 to weeks due to the size of specimen.



Air-Drying Technique

- The pump is attached to one end of the organ and continuous air is injected into the specimen till the tissue fluids will be removed from the organ.
- In order to prevent inner decomposition, a varnish or resin is injected into the organ through a small hole in the air exit of the pump.
- After the pump is removed, it is recommended to apply polyurethane foam injection into the organ in order to prevent the collapsing of organ wall.
- Outer surface of the organ should be varnished with a resin to obtain concrete specimen.



Freeze – Drying Technique

- A specified devices, freeze-dryers, are being used for this process. With a negative pressure (vacuum effect) and a -50°C to -25°C temperature.
- Freeze-dryers have being used for vaccination and food industry and floristry for last two decades.
- The main purpose → To avoid decomposition, at a very low temperature, vacuuming and removing all the body fluids in the samples by evoporation without distorting the shape of the specimens.
- First transform all the body fluids into the gaseous phase and than vacuum the gas in the tank.
- Animals and organs at any size can be made with today's devices. Preparation period can be varied from 1 to 6 months.
- Final specimens look like stuffed animals (taxidermy method).



Please Look Up The Links Below

- Cuddon Freeze Dry for pets.
- Second Life Freeze Dry for animals
- All Critters & Pets Freeze Dry / Freeze Dry taxidermy



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Natural Drying Technique

- A well-known method that can be applied to samples which do not contain high level of body fluids or whose skin is thin enough to dry.
- Fishes, small reptiles, arthropods, sea arthropods, etc
- Main goal → To decrease the body fluid below 2-5% in a place with a natural air-flow and with the drying effect of natural heat, before the bacterial activity starts.
- Depending upon the size and thickness, specimens can be dried under the sun or in a shade.
- This technique has being used for many centuries in many cultures



Natural drying is a very common, traditional and well-known technique for our culture



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Natural Drying Technique

- It should also be coated with a hydrophilic agent such as salt or etc. to accelerate natural drying process.
- Depending on the sample size, air flow rate, heat and sun conditions, the period of drying process varies.



Mummification or Embalming

- If this process is a natural event that takes place by itself, then it is called **mummification**.
- If it is an artificial technique created for a specific purpose, it will be more appropriate to use the term **embalming**.
- The earliest samples were discovered in Ancient Egypt and Inca cultures.
- The main aim of embalming → Removal of all internal organs in the body (including the brain), subsequent expulsion of various solutions into the body, and finally placement of specimen to specific medium with a low moisture and high heat.
- In nature, if the humidity is low and the temperature is high, there may be a spontaneous mummification reaction.



FOR THIS WEEK STUDENTS SHOULD

- Write their info to the list for preparation groups.
- Prepare their medical clothes, glasses, medical hair protection bands for practical study.

THANK YOU 😊



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