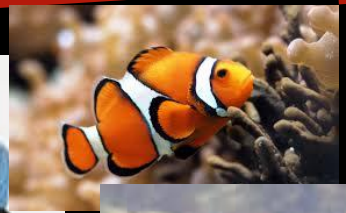
Osmoregulation and Excretion.

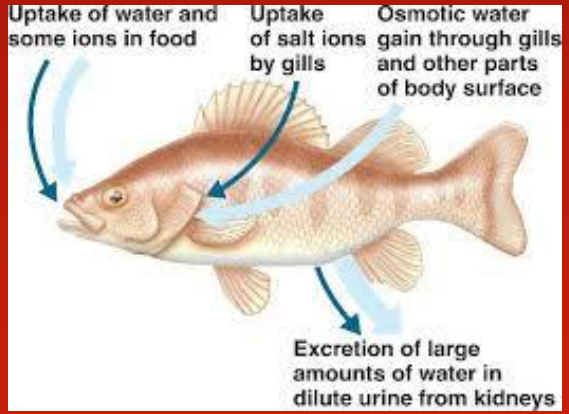
-Shawn Choudhry, Bryce Holsman, Nick Janssen.




WARNING
THE RELATED CONTENT
MAY BE DISTURBING
TO SOME INDIVIDUALS

Define Osmoregulation

- Management of the body's fluid content and also controls salt and water concentration.



Define Excretion

-The process of destroying or eliminating waste in the organism.

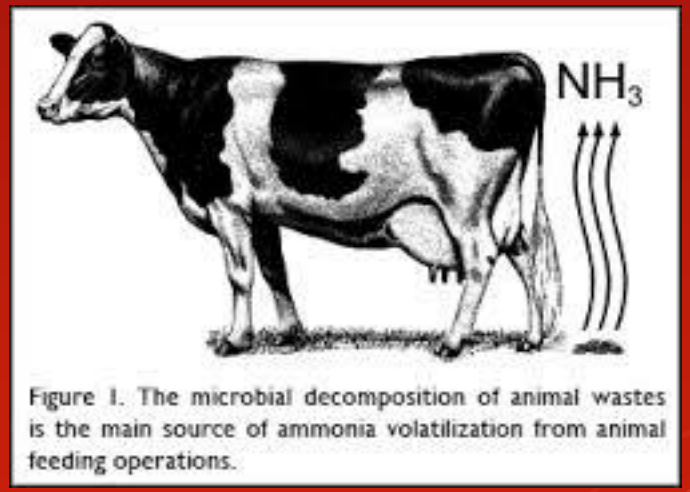
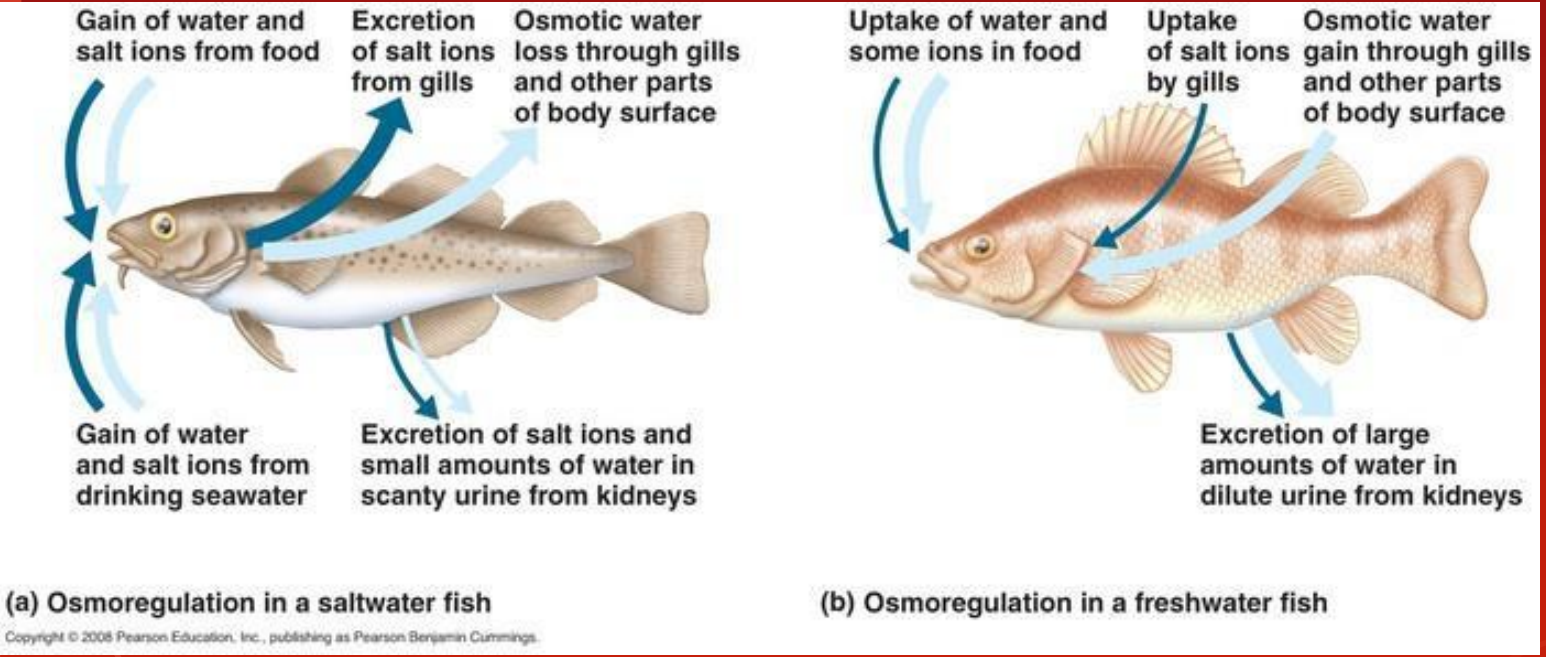


Figure 1. The microbial decomposition of animal wastes is the main source of ammonia volatilization from animal feeding operations.

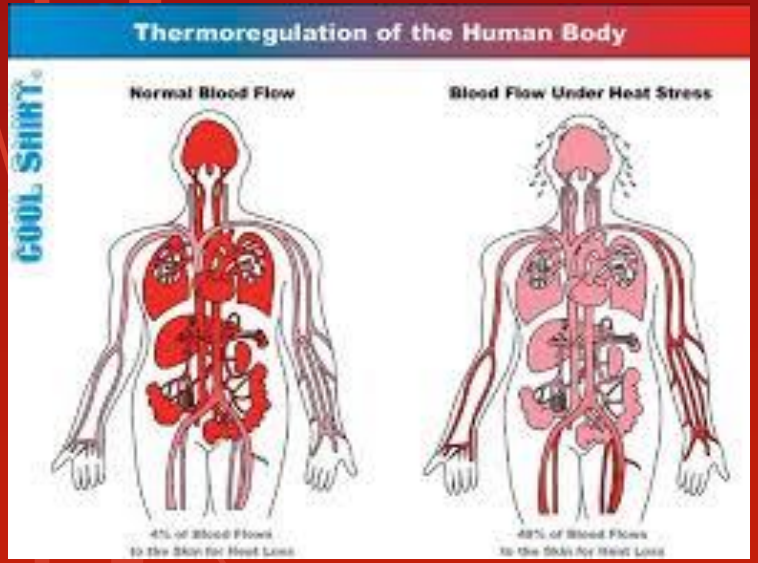
Pics of Osmoregulation and excretion

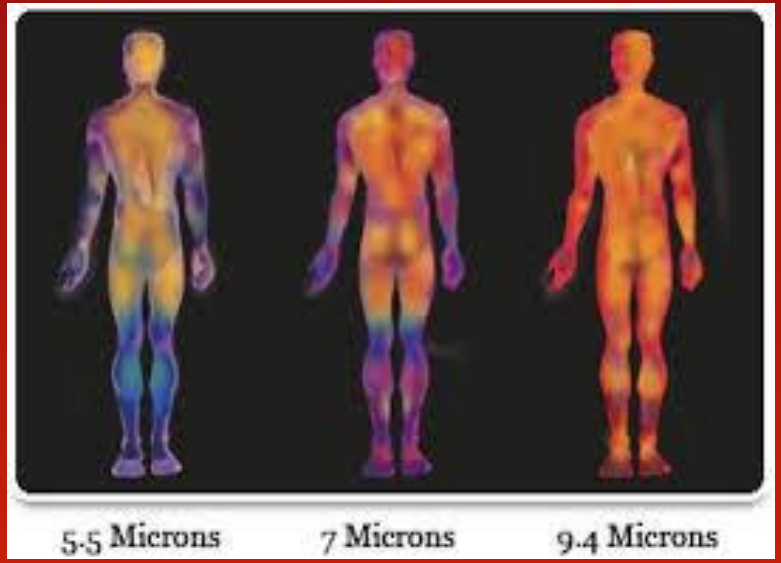


Thermoregulation

- The process that allows the human body to maintain its core internal temperature. The state of having an even internal temperature is called homeostasis.

Pics of Thermoregulation





Its related to osmoregulation and excretion since the temperature of the body also has a huge impact of body's fluid content and waste.

Balancing Water

-Osmoregulation balances the uptake and loss of water in an organism and is controlled by the movement of solutes.
EX: You pee, you need to replace the liquid, you drink fluids like water, Repeat.

Evolution of Osmoregulation

- Since the first hint of life on Earth was marine, osmoregulation originally took place between the animal and its environment and consumed foods. As evolution took place and animals began living on land, osmoregulation started working with the animal and fluids/foods it consumes.
- Animals have evolved to be able to control the amount of water lost through the excretory system

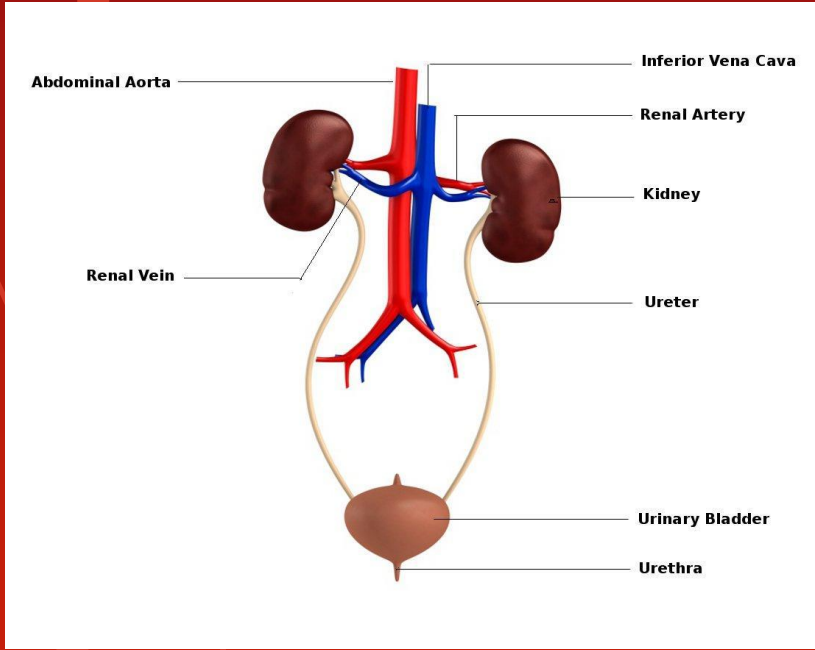
Maintaining Homeostasis

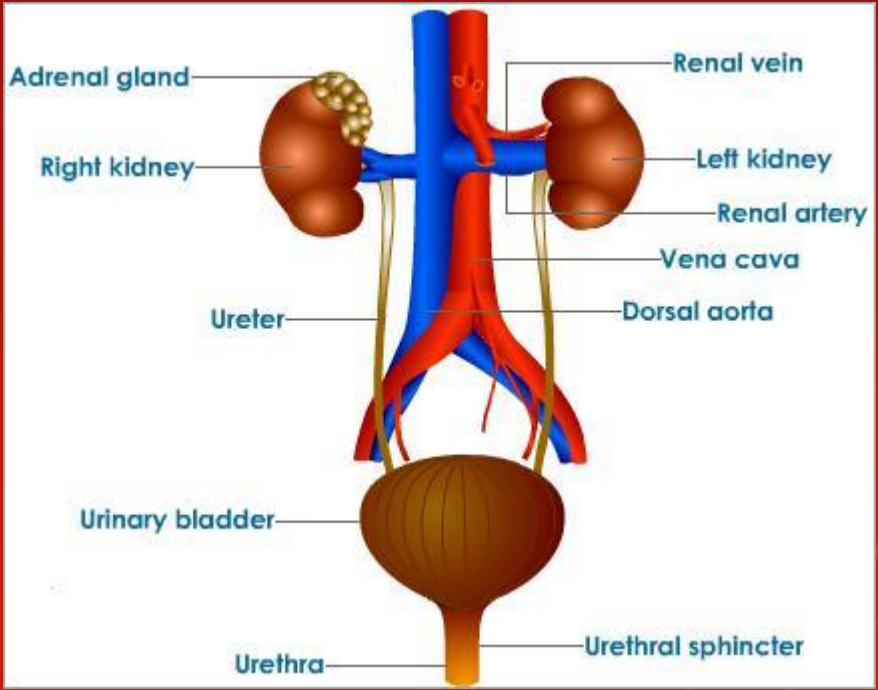
- Osmoregulation is vital to maintaining internal stability
- Osmoregulation attempts to maintain a balance of water and salt concentration inside the body
- Organisms use osmoregulation to keep the body's water level constant and to keep the body from becoming too diluted or too concentrated
- Excretion of urine and waste from the body help maintain homeostasis
- Kidneys play a huge role in maintaining homeostasis

Major Structures

- Kidney- eliminates waste from the bloodstream by production of urine
- Liver- detoxifies and breaks down chemicals before they enter the bloodstream
- Bile- helps break down fats and other wastes into harmless substances
- Large Intestine- extracts any remaining usable water and prepares the waste for excretion
- Skin- the sweat glands maintain the level of salt in the body and bloodstream
- Eccrine Glands- allow excess water to leave the body in a harmless way
- Ureter- propel urine from the kidneys to the urinary bladder
- Urinary Bladder- collects wastes prior to disposal by urination
- Urethra- tube that connects urinary bladder to outside of body for disposal

Structures and Functions





Interdependence

- Excretion is dependent on other systems especially the digestive system to properly digest the food so wastes can exit the body efficiently
- Osmoregulation depends on various organs to make sure the water and salt levels of the body are managed
- Excretion cannot function properly if other systems and organs do not do their job
- For example: if the large intestine does not remove water from the wastes, then the entire process is messed up and excretion cannot occur very well

Osmolarity and Energetics

- There is an energy cost when an animal maintains an osmolarity difference between its body and the external environment
- Osmoregulation must expend energy to move water in and out of the osmotic gradients
- The energy cost of osmoregulation depends on how different an animal's osmolarity is from its surroundings and how much work is required to pump the solutes across the membrane

Transport Mechanisms

- Transport Epithelium- one or more layers of specialized epithelial cells that regulate solute movements
- This transport mechanism moves specific solutes in controlled amounts in specific directions
- Transport epithelium is typically arranged into complex tubular networks with extensive surface areas
- Transport epithelium functions in disposal of metabolic wastes as well as maintaining water balance

Forms of Nitrogenous Waste

- Ammonia- primary waste of aquatic species
- Urea- primary waste of land animals
- Uric Acid- primary waste of insects, land snails, and many reptiles including birds

Urinalysis and tests for wastes

- Urinalysis is a sample to evaluate your urine. This tells if you have been drinking water and other fluids that help your body maintain health. If a human urines or pees and it turns out to be a yellow-orange color, this indicates that he/she has not been drinking enough H20. Drinking water can help in many ways including help cool down the body temperature after a overheated workout, helps bad breath, less body odor and clear urine.

Diseases

-Chronic Kidney Disease-Long lasting disease that results in renal failure due to loss of function in kidneys.

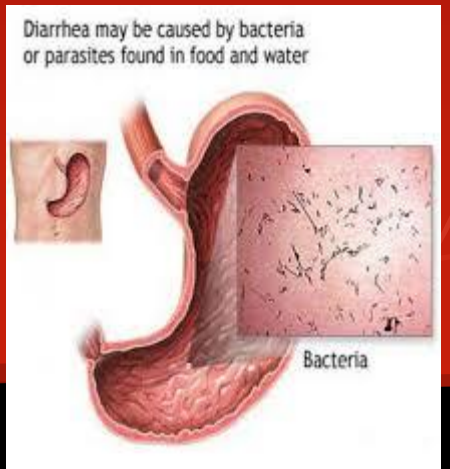
-Hemorrhoids Disease- Swollen and inflamed veins located in the anus that causes discomfort and severe bleeding due to unhealthy diet.

-Dysentery-loss of water in feces which causes bloody diarrhea; therefore, results in pain and discomfort.

How to prevent the diseases?

- Chronic Kidney Disease can be easily cured from a healthy diet and prescribed medicines.
- Hemorrhoids are not easily cured, but has many things to help including injection which creates a scar to close the hemorrhoid, banding which is like a rubber band that is wrapped around the affected area to shut down blood supply, coagulation which is a laser to burn the area so that blood cannot leak and of course surgery.
- If a doctor suspects dysentery a stool sample would be required for the patient. Many undeveloped countries experience dysentery but have no cure. Dysentery can only be prevented by surgery.

Pictures of the Diseases.



Video

https://www.youtube.com/watch?v=TZMJeZL-BVg - Excretion.
https://www.youtube.com/watch?v=3coBQgS_PNM - Osmoregulation.

Work Cited

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