Effect of Saline Purgative on frog intestine

Objective: Evaluation of effect of saline purgative by the use of hypertonic, hypotonic and isotonic solutions of saline, magnesium sulphate and Frog's ringer.

Background:

LAXATIVE: Any drug used in the treatment of constipation to promote the evacuation of feces. Laxatives produce their effect by several mechanisms. The four main types of laxatives include: saline purgatives, fecal softeners, contact purgatives, and Bulk Laxatives.

Saline purgatives: are salts containing highly charged ions that do not readily cross cell membranes and therefore remain inside the lumen, or passageway, of the bowel. By retaining water through osmotic forces, saline purgatives increase the volume of the contents of the bowel, stretching the colon and producing a normal stimulus for contraction of the muscle, which leads to defecation. Some commonly used salts are magnesium sulfate (Epsom salts), magnesium hydroxide (Milk of Magnesia), sodium sulfate (Glauber salt), and potassium sodium tartrate.

Fecal softeners: are not absorbed from the gastrointestinal tract and act to increase the bulk of the feces. Liquid paraffin (mineral oil) can be used either as the oil itself or as a white emulsion. Other fecal softeners have a detergent action that increases the penetration of the stool by water.

Contact purgatives: act directly on the muscles of the intestine, stimulating the wave like contractions (peristalsis) that result in defecation. This type of laxative includes cascara, senna, castor oil, and phenolphthalein. After regular use, their effect tends to lessen, so larger and more frequent doses are necessary until finally they cease to be effective. They are useful, however, when short-term purging is required (e.g., before surgery or after an illness).

Bulk laxatives act by increasing the size of the feces, in part because of their capacity to attract water. This group includes methylcellulose and carboxymethylcellulose, the gums agar and tragacanth, psyllium (plantago) seed, and dietary fibre.

Experimental Animals: Frog

Requirements: Frog's board, dissecting instruments, pithing needle, needle with thread, syringe

with needle.

Drug & Solutions: Magnesium Sulphate 27% (Hypertonic)

Saline 0.9% made upto 0.45% (Hypotonic)

Frog's Ringer (Isotonic)

Procedure:

- ✓ Pith a frog.
- ✓ Expose the abdominal cavity.
- ✓ Trace the small intestine and make three compartments by tying threads at equal distance.
- ✓ Secure the threads tightly so that no fluid can seep through from one compartment to the other.
- ✓ In the first compartment, inject 0.2ml of hypotonic saline
- ✓ In the second compartment 0.2ml of magnesium sulphate
- ✓ In the third compartment 0.2ml of Frog's Ringer
- ✓ Wait for 20 minutes and record the observation.

Observation:

Compartment	Observation	Inference
First Compartment : 0.2ml of 0.5% Nacl saline (hypotonic)	Swollen	The hypotonic solution caused swelling of the tissue as fluid moved into circulation
Second Compartment : 0.2ml of 27% Magnesium sulphate (Hypertonic)	Shrunken	Hypertonic solution moves the fluid from circulation to the GI lumen there by shrinking of the tissue
Third Compartment: 0.2ml of frog's ringer (Isotonic)	No Change	Isotonic solution did not show any fluid movement across the intestinal membrane, hence no change in the tissue.