

by the dehydrating effect of the glycerin on those membranes. Vaginal suppositories or inserts intended for local effects are employed mainly as contraceptives, as antiseptics in feminine hygiene, and as specific agents to combat an invading pathogen. Most commonly, the drugs used are nonoxynol 9 for contraception, trichomonacides to combat vaginitis caused by *Trichomonas vaginalis*, antifungals to treat *Candida (Monilia) albicans*, and anti-infectives/antibiotics directed at other microorganisms. Urethral suppositories may be antibacterial or a local anesthetic preparative for a urethral examination.

Sticks are commonly used for local effect and include hydration/emollient, antibacterial, sunscreen, antipruritic, and other uses.

## Systemic Action

For systemic effects, the mucous membranes of the rectum and vagina permit the absorption of many soluble drugs. Although the rectum is used frequently as the site for the systemic absorption of drugs, the vagina is not as frequently used for this purpose.

Examples of drugs administered rectally in the form of suppositories for their systemic effects include (a) prochlorperazine and chlorpromazine for the relief of nausea and vomiting and as a tranquilizer; (b) morphine and oxymorphone for opioid analgesia; (c) ergotamine tartrate for the relief of migraine syndrome; (d) indomethacin, a nonsteroidal anti-inflammatory analgesic and antipyretic; and (e) ondansetron for the relief of nausea and vomiting.

## SOME FACTORS OF DRUG ABSORPTION FROM RECTAL SUPPOSITORIES

The dose of a drug administered rectally may be greater than or less than the dose of the same drug given orally, depending on such factors as the constitution of the patient, the physicochemical nature of the drug and its ability to traverse the physiologic barriers to absorption, and the nature of the suppository vehicle and its capacity to release the drug and make it available for absorption.

**Table 12.4** EXAMPLES OF DRUGS WITH DIFFERENT OPTIMAL ROUTES OF ADMINISTRATION

Absorbed better rectally than orally	Sodium salicylate Chloral hydrate Methylene blue Atropine, morphine
Absorbed better orally than rectally	Iodides Tetracycline hydrochloride Sodium penicillin G
Oral and rectal absorptions comparable	Sulfanilamide in a glycerinated gelatin base Prednisone

From Allen Jr LV. Suppositories. London: Pharmaceutical Press, 2008:52.

Table 12.4 contains a list of some drugs that are absorbed better rectally as compared to orally, some that are absorbed better orally as compared to rectally, and some cases where the oral and rectal doses are comparable. In some cases, the doses are different, for example, lincomycin, chloral hydrate requires four times the dose rectally as compared to orally and empirically, phenytoin requires about three times the dose rectally as compared to orally.

## Physiological Factors and Drug Effect

Among the physiologic factors that affect drug absorption from the rectum are the circulation route, colonic contents, and the pH and lack of buffering capacity of the rectal fluids.

### Circulation Route

Unlike drugs absorbed after oral administration, drugs absorbed rectally can bypass the portal circulation during their first pass into the general circulation. This enables drugs that are otherwise destroyed in the liver to exert systemic effects. The lower hemorrhoidal veins surrounding the colon receive the absorbed drug and initiate its circulation throughout the body, bypassing the liver. Lymphatic circulation also assists in the absorption of rectally administered drugs.