

Rectal route of Administration: Pharmacological and Pharmaceutical Considerations

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Perspective

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DESCRIPTION

Rectal administration, also known colloquially as boofing, employs the rectum as a route for dispensing medication and other fluids, which are metabolised by the rectum's blood vessels and pass into the systemic circulation, and this allocates the drug to the organs and bodily systems. Despite the oral route is the preferred method for delivering drugs, there are a number of clinical and pharmaceutical reasons why this is not always practicable. In these instances, the rectal route may be a viable option for administering medications with both local and systemic effects. In comparison to other regions of the gastrointestinal tract, the environment in the rectum is regarded generally steady and stable, exhibiting limited enzymatic activity.

Pharmacological and pharmaceutical considerations

There are typically three types of conventional rectal dose forms: liquid dosage forms (e.g., enemas), solid dosage forms (e.g., suppositories, capsules, and tablets), and semi-solid dosage forms. Before medication absorption into the mucosa may occur, solid dosage forms must undergo disintegration, liquefaction, and dissolution. As a result, absorption from solid dosage forms is often slower than absorption from liquid dosage forms.

Rectal delivery of a medicinal product has a faster onset, higher bioavailability, shorter peak, and a shorter half-life than oral administration (depending on the drug). Another advantage of giving a medicine rectally over the oral route is that it induces less nausea and avoids any amount of the drug from being lost owing to emesis (vomiting). Furthermore, considering that the rectum's venous drainage is two-thirds systemic (middle and inferior rectal veins) and one-third hepatic portal system (superior rectal vein), the rectal route bypasses approximately two-thirds of the first-pass metabolism. This means that the medicine will enter the circulatory system with substantially less modification and at a higher concentration.

Ultimately, when the oral route is impeded, rectal administration allows patients to stay at home. In contrast to intravenous lines, which are often inserted in an inpatient setting and require a special formulation of sterile medications, a specialized rectal catheter can be implanted in the home by a physician, such as a hospice nurse or home health nurse. Many oral drugs can be broken and suspended in water for administration through a rectal catheter.

It is beneficial in patients with digestive tract difficulties. This tends to involve patients nearing the end of their lives (an estimated 1.65 million people in the United States receive hospice care each year). Because the rectal route provides a quick, safe, and low-cost option to medicine administration, it may also be used for assisting patients in long-term care or palliative care.

Any new formulations should be tested in the target population for bioavailability, efficacy, and safety. Rectal dose forms, however, ought to be avoided or supervised with caution in a select patient categories. In general, medications are not typically delivered rectally in neonates (term or preterm) due to the possibility of sporadic absorption as well as harm to the fragile rectal lining that could lead to infection. Similarly, for immunocompromised patients, the potential risk of trauma and subsequent infection with rectal dose forms is noteworthy.

Despite its advantages, the rectal route for administering drugs is currently underutilized. Although the oral route is arguably the most efficient and preferred route for drug delivery, there are a number of instances in which this is not practical from a clinical or pharmacological perspective. In these scenarios, the rectal route may be a viable option for administering medications with both local and systemic effect. To optimize the promise of this route to treat systemic and local disorders, continued advances in rectal medication formulation and detailed investigations on the biological interactions of rectal drug administration are required.