

Understanding the Mechanism of Action of Drugs Acting on Purgatives

Muralinath E.^{1*}, Pooja Devi², Prasanta Chbukdhara³, Sanjib Borah⁴, Kalyan C.⁵, Archana Jain⁶, Guruprasad M.⁷

¹Associate Professor, College of veterinary science, Proddatur, Andhra Pradesh, India

²Assistant Professor, Veterinary College, Mandi district, Himachal Pradesh, India

³Assistant Professor, Lakhimpur, College of veterinary science, Assam, India

⁴Associate Professor Lakhimpur, College of veterinary science, Assam, India

⁵Assistant Professor, College of veterinary science, Andhra Pradesh, India

⁶Professor and Head, Dept. of Vety Physiology and Biochemistry, Veterinary College, Jabalpur, Madhya Pradesh, India

⁷AGM, Vaishnavi Microbial Pharma Pvt Ltd, Hyderabad, India

***Corresponding Author**

E-Mail Id:-muralinathennamuri@gmail.com

ABSTRACT

Purgatives are termed as laxatives. Purgatives enhance bowel movements to eliminate fecal matter from the body. Bulk-forming laxatives namely psyllium and methyl cellulose show their action by enhancing the volume and water content of the stool and the passage of stool occurs through intestines via peristalsis. Osmotic laxatives such as lactulose and propylene glycol act by drawing water into the intestines. Osmotic laxatives result in constipation. stimulant laxatives such as bisacodyl and senna act by irritating the intestinal lining which results in enhanced peristalsis and increased bowel movements. Emollients or stool softeners namely docusate sodium act by increasing an incorporation of water and fat into the stool, making it softer and easier to pass. An excessive use of laxatives particularly stimulant laxatives may result in dehydration, electrolyte imbalances and damage to the intestines. Finally it is concluded that purgatives play a role regarding management of constipation.

Keywords:-Purgatives, bowel movements, bulk-forming laxatives, methyl cellulose, psyllium, osmotic laxatives, lactulose, poly ethylene glycol, dehydration, stimulant laxatives, constipation, emollient or stool softeners, combination laxatives, electrolyte imbalances and digestive health.

INTRODUCTION

Purgatives, commonly known as laxatives, are substances that promote bowel movements, aiding in the elimination of fecal matter from the body.

Various drugs act on purgatives to induce this effect, and understanding their mechanisms of action is crucial for medical professionals and individuals seeking relief from constipation or related conditions.

Bulk-Forming Laxatives

One category of drugs acting on purgatives includes bulk-forming laxatives. These agents, such as psyllium and methylcellulose, work by increasing the volume and water content of the stool.

By absorbing water and forming a gel-like substance, bulk-forming laxatives soften the stool, promoting peristalsis and facilitating its passage through the intestines.

Osmotic Laxatives

Osmotic laxatives, like lactulose and polyethylene glycol, function by drawing water into the intestines. This increased water content softens the stool and stimulates bowel movements. Osmotic laxatives are often used to relieve constipation and maintain regular bowel habits. They are considered relatively safe when used as directed but may cause dehydration if not enough fluids are consumed.

Stimulant Laxatives

Drugs acting on purgatives also include stimulant laxatives, such as bisacodyl and senna. These substances work by irritating the intestinal lining, which leads to increased peristalsis and accelerated bowel movements. While effective in relieving constipation, long-term use of stimulant laxatives can result in dependency and potential damage to the intestines. Therefore, they are generally recommended for short-term use or under medical supervision.

Emollient or Stool Softeners

Emollient laxatives, such as docusate sodium, function by promoting the incorporation of water and fat into the stool, making it softer and easier to pass. These agents are particularly useful for individuals who need to avoid straining during bowel movements, such as those recovering from surgery or childbirth. Emollient laxatives are generally considered safe for long-term use but are often used in combination with other laxatives for enhanced efficacy.

Combination Laxatives

Some medications combine different types of laxatives to provide a comprehensive approach to relieving constipation. For example, a combination of a stool softener and a stimulant laxative may offer the benefits of both agents, softening the stool and promoting bowel movements

simultaneously. These combination laxatives are designed to address multiple factors contributing to constipation, providing a more effective solution for certain individuals.

Clinical Considerations and Precautions

While drugs acting on purgatives can be beneficial in managing constipation and related conditions, it is crucial to use them with caution. Prolonged or excessive use of laxatives, especially stimulant laxatives, may lead to dehydration, electrolyte imbalances, and damage to the intestines. Individuals with certain medical conditions, such as heart or kidney problems, should consult their healthcare provider before using purgative medications.

Furthermore, laxative abuse, a condition known as laxative dependency, can develop when individuals rely on these medications excessively. This can lead to a cycle of worsening constipation and the need for higher doses of laxatives to produce the desired effect. Breaking this cycle often requires medical intervention and lifestyle changes to promote regular bowel habits without the need for constant medication.

CONCLUSION

In summary, drugs acting on purgatives play a crucial role in managing constipation and promoting healthy bowel habits. Understanding the mechanisms of action of different laxative types allows healthcare professionals to tailor treatment plans to individual needs. However, it is essential to use these medications judiciously, considering potential side effects and the risk of dependency. As with any medication, individuals should consult their healthcare providers for guidance on the appropriate use of purgatives to ensure optimal digestive health.

REFERENCES

1. Krogh K, Chiarioni G, Whitehead W. Management of chronic constipation in adults. *United European Gastroenterol J*. 2017 Jun;5(4):465-472. [[PMC free article](#)] [[PubMed](#)]
2. Masri Y, Abubaker J, Ahmed R. Prophylactic use of laxative for constipation in critically ill patients. *Ann Thorac Med*. 2010 Oct;5(4):228-31. [[PMC free article](#)] [[PubMed](#)]
3. O'Brien SH, Fan L, Kelleher KJ. Inpatient use of laxatives during opioid administration in children with sickle cell disease. *Pediatr Blood Cancer*. 2010 Apr;54(4):559-62. [[PubMed](#)]
4. Liu LW. Chronic constipation: current treatment options. *Can J Gastroenterol*. 2011 Oct;25 Suppl B(Suppl B):22B-28B. [[PMC free article](#)] [[PubMed](#)]
5. Leung L, Riutta T, Kotecha J, Rosser W. Chronic constipation: an evidence-based review. *J Am Board Fam Med*. 2011 Jul-Aug;24(4):436-51. [[PubMed](#)]
6. Camilleri M, Bharucha AE. Behavioural and new pharmacological treatments for constipation: getting the balance right. *Gut*. 2010 Sep;59(9):1288-96. [[PMC free article](#)] [[PubMed](#)]
7. Jin J. JAMA patient page. Over-the-counter laxatives. *JAMA*. 2014 Sep 17;312(11):1167. [[PubMed](#)]
8. Tack J, Müller-Lissner S. Treatment of chronic constipation: current pharmacologic approaches and future directions. *Clin Gastroenterol Hepatol*. 2009 May;7(5):502-8; quiz 496. [[PubMed](#)]
9. Twycross R, Sykes N, Mihalyo M, Wilcock A. Stimulant laxatives and opioid-induced constipation. *J Pain Symptom Manage*. 2012 Feb;43(2):306-13. [[PubMed](#)]
10. Andresen V, Layer P. Medical Therapy of Constipation: Current Standards and Beyond. *Visc Med*. 2018 Apr;34(2):123-127. [[PMC free article](#)] [[PubMed](#)]
11. Johanson JF. Review of the treatment options for chronic constipation. *MedGenMed*. 2007 May 02;9(2):25. [[PMC free article](#)] [[PubMed](#)]
12. Joo JS, Ehrenpreis ED, Gonzalez L, Kaye M, Breno S, Wexner SD, Zaitman D, Secrest K. Alterations in colonic anatomy induced by chronic stimulant laxatives: the cathartic colon revisited. *J Clin Gastroenterol*. 1998 Jun;26(4):283-6. [[PubMed](#)]
13. Xing JH, Soffer EE. Adverse effects of laxatives. *Dis Colon Rectum*. 2001 Aug;44(8):1201-9. [[PubMed](#)]
14. Siegel JD, Di Palma JA. Medical treatment of constipation. *Clin Colon Rectal Surg*. 2005 May;18(2):76-80. [[PMC free article](#)] [[PubMed](#)]
15. Schuster BG, Kosar L, Kamrul R. Constipation in older adults: stepwise approach to keep things moving. *Can Fam Physician*. 2015 Feb;61(2):152-8. [[PMC free article](#)] [[PubMed](#)]
16. Madia VN, Messori A, Saccoliti F, Tudino V, De Leo A, De Vita D, Bortolami M, Scipione L, Pindinello I, Costi R, Di Santo R. Tegaserod for the Treatment of Irritable Bowel Syndrome. *Antiinflamm Antiallergy Agents Med Chem*. 2020;19(4):342-369. [[PMC free article](#)] [[PubMed](#)]
17. Vijayvargiya P, Camilleri M. Use of prucalopride in adults with chronic idiopathic constipation. *Expert Rev Clin Pharmacol*. 2019 Jul;12(7):579-589. [[PubMed](#)]
18. Ambizas EM, Ginzburg R. Lubiprostone: a chloride channel activator for treatment of chronic constipation. *Ann Pharmacother*. 2007 Jun;41(6):957-64. [[PubMed](#)]
19. Baker EH, Sandle GI. Complications of laxative abuse. *Annu Rev Med*. 1996;47:127-34. [[PubMed](#)]
20. Roerig JL, Steffen KJ, Mitchell JE, Zunker C. Laxative abuse: epidemiology, diagnosis and

-
- management. *Drugs*. 2010 Aug 20;70(12):1487-503. [[PubMed](#)]
21. Oster JR, Materson BJ, Rogers AI. Laxative abuse syndrome. *Am J Gastroenterol*. 1980 Nov;74(5):451-8. [[PubMed](#)]
22. Copeland PM. Renal failure associated with laxative abuse. *Psychother Psychosom*. 1994;62(3-4):200-2. [[PubMed](#)]
23. Shirasawa Y, Fukuda M, Kimura G. Erratum to: Diuretics-assisted treatment of chronic laxative abuse. *CEN Case Rep*. 2014 Nov;3(2):215-216. [[PMC free article](#)] [[PubMed](#)]
24. Costilla VC, Foxx-Orenstein AE. Constipation in adults: diagnosis and management. *Curr Treat Options Gastroenterol*. 2014 Sep;12(3):310-21. [[PubMed](#)]
25. Jackson R, Cheng P, Moreman S, Davey N, Owen L. "The constipation conundrum": Improving recognition of constipation on a gastroenterology ward. *BMJ Qual Improv Rep*. 2016;5(1) [[PMC free article](#)] [[PubMed](#)]