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Neomycin

Updated: April 12, 2019.

OVERVIEW

Introduction

Neomycin is a broad spectrum aminoglycoside antibiotic whose current use is limited to oral and topical administration. Neomycin has minimal oral absorption and its use has not been linked to instances of acute liver injury.

Background

Neomycin (nee" oh mye' sin) is an aminoglycoside with a broad spectrum of activity against both gram positive and gram negative organisms. Like other aminoglycosides, neomycin is thought to act by binding to bacterial ribosomes and inhibiting protein synthesis. Neomycin has activity against many aerobic gram negative and gram positive bacteria, including the major E. coli species resident in the colon as well as the enteropathogenic forms of E. coli known to cause traveler's diarrhea. Like other aminoglycosides, neomycin is poorly absorbed orally. The lack of absorption from the gastrointestinal tract is the basis of the main use of neomycin, as an oral agent to suppress intestinal bacterial flora. Oral neomycin is indicated for treatment of infectious diarrhea, for suppression of intestinal bacterial flora in patients undergoing colorectal surgery, and as a means of decreasing colonic bacteria and production of ammonia in hepatic encephalopathy. Topical neomycin is used for burns, wounds and ulcerations and as otic suspensions for external otitis. Neomycin is available in multiple generic forms including oral tablets of 500 mg. The typical adult dose of neomycin is 1 to 3 grams daily in four divided doses. Long term therapy should be avoided because of the possibility of some systemic absorption and the high rate of oto- and nephrotoxicity associated with neomycin use. Other adverse events include nausea, diarrhea, and *Clostridium difficile* related colitis.

Hepatotoxicity

Oral and topical therapy with neomycin has not been linked serum alkaline phosphatase or aminotransferase elevations, and no convincing cases of symptomatic or icteric hepatotoxicity due to oral neomycin have been published. The poor absorption of neomycin makes it unlikely that systemic levels of the drug that might cause liver injury could be achieved. Furthermore, the ototoxicity of absorbed neomycin is likely to supervene before liver toxicity would occur.

References to the safety and potential hepatotoxicity of neomycin are provided in the Overview section on the Aminoglycosides.

Drug Class: Aminoglycosides

Other Drugs in the Class: Amikacin, Gentamicin, Plazomicin, Streptomycin, Tobramycin

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Neomycin – Generic

DRUG CLASS

Aminoglycosides

COMPLETE LABELING

Product labeling at DailyMed, National Library of Medicine, NIH

CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NO.	MOLECULAR FORMULA	STRUCTURE
Neomycin	1404-04-2	Unspecified