

DERMATOLOGY PEARLS

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Ototoxicity in Dogs and Cats

There is conflicting information in the literature about ototoxicity of topical medications in the canine ear. Most information about topical medication ototoxicity is derived from studies on guinea pigs and chinchillas.¹ There have been a few studies in dogs with ruptured eardrums using brainstem auditory evoked response (**BAER**) results after application of topical medications, and these studies found that topical medications which had *no* significant effect on BAER (ie. were not ototoxic) included marbofloxacin, clotrimazole, gentamycin (diluted to 0.14% in TrizEdta),² 0.2% chlorhexidene,³ and squalene.⁴ Silver sulfadiazine cream diluted 50:50 in sterile water had variable effect on BAER.² Conversely, topical medications which were found to *suppress* BAER in dogs (ie. were ototoxic) included 1% tobramycin, 2.5% ticarcillin,² DSS, carbamide peroxide, and triethanolamine.⁴ The literature in cats is even more sparse. In one cat study, topical gentamycin was found to be ototoxic when applied into the bulla at concentrations ranging from 3%-10%,⁵ 2% chlorhexidene was found to be both vestibulotoxic and ototoxic, and 0.05% chlorhexidene was found to be vestibulotoxic.⁶⁻⁸

A nice summary about canine ototoxicity from the Compendium on Continuing Education for the Practicing Veterinarian⁹ can be found at:

<http://www.dechra-us.com/Articles.aspx?PID=23573&Action=1&NewsId=725¤tPage=7>

From Gotthelf's **Small Animal Ear Diseases**¹⁰:

<i>Potentially ototoxic antibiotics:</i>	<i>Potentially ototoxic antifungals:</i>	<i>Potentially ototoxic antiseptics:</i>	<i>Potentially ototoxic ceruminolytic agents:</i>	<i>Miscellaneous agents:</i>
All aminoglycosides	Amphotericin B	Acetic acid	Carbamide peroxide	Cytoxan
Bacitracin	Griseofulvin	Benzalkonium chloride	DSS	Dapsone
Chloramphenicol	(In humans, topical antifungal products which have been found not to be ototoxic include clotrimazole, fluconazole, ketoconazole, econazole, and miconazole. Conversely, topical antifungal products which have been found to be ototoxic include acetic acid, boric acid, cresylate, and Gentian violet.) ¹¹	Cetrimide	Propylene glycol	Detergents
Erythromycin		Chlorhexidene	Polyethylene glycol	DMSO
Gramicidin		Ethanol	Triethanolamine	Diphenylhydrazine
Oxytetracycline		Iodine and iodophors	Toluene	Mercury
Minocycline		Merthiolate		Potassium bromide
Polymyxin B				Triethyl tin bromide and chloride
Tetracycline				
Ticarcillin				
Vancomycin				

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