

Balance Dugs

Drugs	TYPE	Pharmacokinetics	Uses	Adverse effect	Contraindication
VESTIBULAR SUPPRESSANTS (ANTIEMETICS) 1. H₁ antagonist Meclizine Dimenhydrinate	Antihistamine Anticholinergic	Block H ₁ receptors in CRTZ. Sedative effects. Weak anticholinergic effects. ↓ Excitability in the labyrinth and blocks conduction in vestibular-cerebellar pathways.	Allergy. Sedative. Control extrapyramidal side effects of antipsychotic drugs. Prevention of motion sickness. Control vomiting in postoperative, pregnancy.	Hypersensitivity reactions: Blocks H ₁ in blood vessels → ↑ vasoconstriction. ↓ redness , hyperthermia & edema in inflammatory reactions. Blocks H ₁ receptors in nociception → ↓ itching . Sedation. Dizziness. Anticholinergic side effects.	Glaucoma Prostatic enlargement
2. Anticholinergics Scopolamine	Sphincter modulators	↑ motion tolerance. Produce reversible over compensation if administered after compensation has been attained to a vestibular imbalance.		Dry mouth, Dilated pupils. Sedation.	
3. Phenothiazines Prochlorperazine Promethazine	Dopamine antagonists (at CRTZ), tipsychotic, antiemetic & weak sedative activity		Uses: Psychotic disorders. Acute mania. Severe anxiety (short term treatment). Control vomiting associated with vertigo.		
4. 5HT₃ antagonists Ondansetron Granisetron					
5. TCA Amitriptyline	Anticholinergic, Antihistamine & Antidepressant				
6. Dopamine Antagonists Metoclopramide Damperidone (don't cross BBB) & less side effect & less effect on vertigo	A potent central antiemetic. Act on chemo receptor trigger zone. Has potent gastroprokinetic effect. Yet is ineffective in preventing motion sickness.			Adverse effect: Restlessness or drowsiness Extrapyramidal	

7. H₁ agonists & H₃ antagonist Betahistine	Weak agonist on H₁ → regulates inner ear fluid homeostasis (labyrinthine circulation) → inducing vaso-dilatation in middle ear → relieves pressure in inner ear Strong antagonism of H₃ → ↑ augmenting effects on H ₁ receptors in the brain →: ↑ H synthesis in tuberomammillary nuclei of the posterior hypothalamus to promote & facilitate central vestibular compensation. ↑ H release in vestibular nuclei ↑ levels of neurotransmitters such as 5HT in the brainstem, which inhibits the activity of vestibular nuclei .	Tablet, Rapidly & completely absorbed t _{1/2} =2-3h Partially metabolized (active) & excreted in urine	Headache Nausea Gastric effects ↓ appetite and weight loss	Peptic ulcer Pheochromocytoma Bronchial asthma
8. Benzodiazepines Lorazepam Clonazepam Diazepam	Promote & facilitate central vestibular compensation via GABA modulation. (They potentiate effects of gamma-aminobutyric acid, i.e. Facilitate inhibitory GABA neurotransmission) By this they acts centrally to ↓ vestibular response		Dependence (means: if u stop using the drug → other symptoms will show)	
DRUGS INDUCING VERTIGO				
MIXED OTOTOXINS (Affect structure & function)	Aminoglycoside antibiotics: gentamycin, kanamycin, neomycin, streptomycin, tobramycin, netilmicin. Fluroquinolones, Vancomycin, Polymixin. Quinine, chloroquine, quinidine. Nitrogen mustard. Loop diuretics. NSAIDs. Tobacco.	Structural: Neomycin → activate caspases → Death Receptor Pathway (apoptosis). Gentamycin → evoke free radicals → Mitochondrial Pathway	Functional: Quinine, chloroquine, quinidine Loop diuretics NSAIDs They cause : ↓ local blood flow → biochemical changes → alter electromechanical transduction (firing impulse)	
VESTIBULOTOXINS (Affect function)	Drugs altering fluid & electrolyte Diuretics Antihypertensives. Drugs altering vestibular firing. Anticonvulsants Antidepressants Sedative hypnotics Alcohol Cocaine	Drugs that Prevent Recurrence Diuretics → thiazides Vasodilators → H ₁ Agonists Corticosteroids → ↓ inflammation L-type Ca Channel Blockers → (cinnarazine, flunarazine) verapamil → constipation ✓ Vertigo may cause diarrhea , so we use verapamil coz it cause constipation		