Autonomic overview

System	Primary transmitter(s)	Typical effects
Sympathetic (fight/flight)	Noradrenaline; adrenaline (adrenal medulla)	↑ HR/contractility, bronchodilation, pupil dilation, ↓ GI motility, peripheral vasoconstriction
Parasympathetic	Acetylcholine	↓ HR, bronchoconstriction, pupil constriction, ↑ GI motility and secretions

Noradrenergic system – key drug links

- Heart: β-adrenoceptors (e.g. propranolol is a β antagonist).
- Blood vessels: α/β receptors (e.g. prazosin is an α1 antagonist).
- Lungs: β2 receptors present (e.g. salbutamol/Ventolin is a β2 agonist).
- Termination largely via reuptake; cocaine blocks reuptake transporters; amphetamine increases release (indirect sympathomimetic).

Cholinergic system – key drug links

- Nicotinic receptors (skeletal muscle NMJ): ion channel-linked; neuromuscular blockers (e.g. tubocurarine) cause paralysis (used in anaesthesia/ventilation).
- Muscarinic receptors: heart, gut, lung; muscarinic antagonists include atropine (also used to dilate pupils).
- Termination via acetylcholinesterase (AChE); reversible inhibitors (e.g. edrophonium for MG diagnosis); irreversible inhibitors include organophosphates (e.g., malathion) and nerve agents (e.g. sarin).

Serotonin (5-HT) – key points & drugs

- Roles: gut motility (majority in gut), platelets (aggregation), CNS (mood, sleep, appetite, vomiting).
- Termination via SERT reuptake (also present in gut).
- Examples: sumatriptan (migraine, 5-HT agonist); ondansetron (antiemetic, 5-HT antagonist); SSRIs (e.g. fluoxetine/Prozac).
- Common SSRI side effects: nausea/diarrhoea, appetite change, anxiety, insomnia.

Nitric oxide (NO)

- Biologically active gas; synthesised on demand; key in vasodilation and macrophage function.
- Impaired NO associated with hypertension, diabetes, coronary artery disease, renal failure, pregnancy-induced hypertension, neurodegeneration.
- Clinical uses: angina and pulmonary hypertension (NO donors).
- Inhibiting eNOS would be expected to increase blood pressure.

Prostaglandins & leukotrienes

- Local mediators; synthesised on demand; central to inflammation.
- NSAIDs inhibit COX (e.g. aspirin/ibuprofen) → anti-inflammatory, analgesic, antipyretic.
- Common NSAID risk: gastric ulceration.