

Table 2-3 Effects of the Autonomic Nervous System on Organ System Function

Organ	Sympathetic		Parasympathetic	
	Action	Receptor	Action	Receptor
Heart				
SA node, heart rate	↑	β_1	↓	M
AV nodal conduction	↑	β_1	↓	M
Contractility	↑	β_1	↓ (atria only)	M
Vascular Smooth Muscle				
Skin; splanchnic	Constricts	α_1		
Skeletal muscle	Dilates	β_2		
Skeletal muscle	Constricts	α_1		
Endothelium			Releases EDRF	M
Bronchioles	Dilates	β_2	Constricts	M
Gastrointestinal Tract				
Smooth muscle, walls	Relaxes	α_2, β_2	Contracts	M
Smooth muscle, sphincters	Contracts	α_1	Relaxes	M
Saliva secretion	↑	β_1	↑	M
Gastric acid secretion			↑	M
Pancreatic secretion			↑	M
Bladder				
Wall, detrusor muscle	Relaxes	β_2	Contracts	M
Sphincter	Contracts	α_1	Relaxes	M
Male Genitalia	Ejaculation	α	Erection	M
Eye				
Radial muscle, iris	Dilates pupil (mydriasis)	α_1		
Circular sphincter muscle, iris			Constricts pupil (miosis)	M
Ciliary muscle	Dilates (far vision)	β	Contracts (near vision)	M
Skin				
Sweat glands, thermoregulatory	↑	M*		
Sweat glands, stress	↑	α		
Pilomotor muscle (goose bumps)	Contracts	α		
Lacrimal Glands			Secretion	M
Liver	Gluconeogenesis; glycogenolysis	α, β_2		
Adipose Tissue	Lipolysis	β_1		
Kidney	Renin secretion	β_1		

AV, Atrioventricular; EDRF, endothelial-derived relaxing factor; M, muscarinic receptor; SA, sinoatrial.

*Sympathetic cholinergic neurons.