

### 10.3.1

## A Table of Actions for the Sympathetic and Parasympathetic Divisions

Effector Organ	Sympathetic Effects (receptor)	Parasympathetic Effects (receptor)
Eye (iris)	Contraction of dilator pupillae muscles – mydriasis ( <b><math>\alpha 1</math></b> )	Contraction of sphincter pupillae muscles – miosis ( <b>M</b> )
Eye (ciliary muscle)	Relaxation ( <b><math>\beta 2</math></b> ) for distant vision	Contraction ( <b>M</b> ) for accommodation of lens (near vision) and increase aqueous humor outflow into canal of Schlemm
Eye (ciliary body epithelium)	Increased aqueous humor production ( <b><math>\beta 1</math></b> )	—
Heart	Increased heart rate, increased force of contraction and increased conduction rate ( <b><math>\beta 1</math></b> )	Decreased heart and conduction rate ( <b>M</b> ), decreased atrial contractility ( <b>M</b> )
Arterioles(skin,abdominal viscera, kidney)	Strong vasoconstriction ( <b><math>\alpha 1</math></b> )	—
Arterioles(skeletal muscle)	Weak vasoconstriction ( <b><math>\alpha 1</math></b> ) Vasodilation ( <b><math>\beta 2</math></b> )	—
Vessels(heart)	Vasoconstriction ( <b><math>\alpha 1</math></b> ), Vasodilation ( <b><math>\beta 2</math></b> )	—
Lungs	Dilates Bronchioles ( <b><math>\beta 2</math></b> )	Constricts bronchioles ( <b>M</b> )
Uterus, pregnant	Constriction ( <b><math>\alpha 1</math></b> ), relaxation ( <b><math>\beta 2</math></b> )	Contraction ( <b>M</b> )
Gastrointestinal tract wall	Decreased tone ( <b><math>\alpha 1, \alpha 2, \beta 2</math></b> )	Increased tone ( <b>M</b> )

Gastrointestinal tract sphincter	Contraction ( <b>α1</b> )	Relaxation ( <b>M</b> )
Gastrointestinal tract secretion	—	Increased ( <b>M</b> )
Kidney	Increased renin release ( <b>β1</b> )	—
Bladder wall (detrusor muscle)	Relaxation ( <b>β2</b> )	Contraction ( <b>M</b> )
Internal urinary sphincter	Contraction ( <b>α1</b> )	Relaxation ( <b>M</b> )
Pancreas	Decreased insulin secretion ( <b>α2</b> ), decreased exocrine secretion ( <b>α</b> )	Increased insulin secretion ( <b>M</b> ), increased exocrine secretion ( <b>M</b> )
Fat cells	Lipolysis ( <b>β3</b> )	—
Liver	Glycogenolysis ( <b>α1,β2</b> ), Gluconeogenesis ( <b>α1,β2</b> )	—
Piloerector muscles of skin	Contraction ( <b>α1</b> )	—
Salivary gland	Constriction of vessels & small production of a viscous saliva. ( <b>α1</b> )	Dilation of vessels & large production of thin saliva ( <b>M</b> )
Sweat gland	Generalized sweating ( <b>M</b> ) Localized sweating(stress) – palms & soles ( <b>α1</b> )	—
Adrenal medullae	Increased secretion of EPI or NE ( <b>N</b> )	—



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