

## Comparison of Neurotransmitters (Landscape)

Neurotransmitter	Chemical Type	Main Effect	Major Functions	Receptors	Too Little	Too Much
Acetylcholine (ACh)	Ester	Excitatory & Inhibitory	Muscle contraction, ANS, memory	Nicotinic, Muscarinic	Paralysis, Alzheimer's	Muscle spasms, OP poisoning
Dopamine (DA)	Monoamine	Modulatory	Movement, reward, motivation	D1–D5	Parkinson's disease	Schizophrenia
Norepinephrine (NE)	Monoamine	Mostly excitatory	Alertness, stress response	$\alpha$ , $\beta$ receptors	Depression	Anxiety, hypertension
Serotonin (5-HT)	Monoamine	Excitatory & Inhibitory	Mood, sleep, appetite	5-HT receptors	Depression	Serotonin syndrome
Glutamate	Amino acid	Excitatory	Learning, memory	NMDA, AMPA	Cognitive deficit	Stroke, excitotoxicity
GABA	Amino acid	Inhibitory	Neuronal inhibition	GABA-A, B, C	Epilepsy	Sedation
Glycine	Amino acid	Inhibitory	Spinal cord inhibition	Ionotropic	Hyperexcitability	Weakness
Neuropeptides	Peptides	Mostly inhibitory	Pain modulation	Metabotropic	Increased pain	Respiratory depression

### 🔑 High-Yield Notes (Very Important)

- Fast transmission → Ionotropic receptors
- Slow, long-lasting effects → Metabotropic receptors
- Excitatory NTs → Glutamate
- Main inhibitory NT → GABA
- Muscle contraction → Acetylcholine
- Movement control → Dopamine