03 - 3. Dopamine

3. Dopamine

•tyrosine l-dopa dopamine Source Source •tyrosine hydroxylase Rate limiting step Rate limiting step •Monoamine oxidase (MAO) & Catechol-o-methyl transferase (COMT). •MAO-A more selectively metabolizes norepinephrine and serotonin •MAO-B more selectively metabolizes dopamine. Breakdown enzymes Breakdown enzymes •Homovanillic acid Breakdown product Breakdown product •Dopamine transporter (cocaine inhibits this transported) Reuptake Reuptake •Motivation, novelty seeking, reward circuitry (addictions), arousal and motor movement gating in basal ganglia Function Function •5 types; D1 to D5 . All are G protein coupled •D1-like D1 & D 5; increase adenylate cyclase (stimulatory). D1 exclusively postsynaptic; resistant to antagonism. D5 more limbic in distribution; 10 times higher dopamine affinity •D2-like D2,3 & 4 ; decrease adenylate cyclase (inhibitory). D4 is found primarily in the frontal cortex and clozapine has a high affinity. D4-selective antagonists do not have antipsychotic efficacy. Receptors Receptors •Levels low in Parkinson’s; high in psychosis especially at mesolimbic area; may be low in anhedonia and negative symptoms in mesocortical area. Disorders Disorders

---

Revision #1
Created 2026-01-04 20:03:03 UTC by Omar Ayman
Updated 2026-01-04 20:03:03 UTC by Omar Ayman