

306 **SPECIFIC DRUGS of ABUSE** (p.1)

1. **CNS Stimulant Drugs**

- ? DA agonists, esp. at DA_{2,3} & 4 RSs
- ? Amphetamines – reverses DA reuptake transporter protein & inhibits other neurons that normally block DA release → more DA released by neurons
- ? Cocaine – blocks the reuptake transporter protein for DA, NE and 5HT
- ? Both → greater accumulation of DA in synaptic cleft (which then can → presynaptic autoreceptors to be stimulated by the DA → less DA then secreted + presynaptic cell has become depleted of DA (and only slowly can synthesize more) → lack of DA in synaptic cleft → post-stimulant use “crash” (incl. depression)
- ? Methylphenidate (Ritalin) – also blocks (more slowly) reuptake of DA and is taken at a smaller dose level (is much less prone to abusive use)

2. **Nicotine**

- ? Stimulates nicotinic ACh RSs in nucleus accumbens → increase release of DA

3. **Opiates**

- ? Stimulate endorphin RSs → inhibits ventral tegmental neurons
- ? Ventral tegmental neurons normally secrete GABA which inhibits the release of DA in other neurons
- ? So, opiate use causes inhibition of the VT inhibition → “disinhibition” of the DA releasing neurons → more DA released

4. **Marijuana**

- ? Stimulate the Cannabinoid RSs that use “anandamide” NT
- ? Limits release of both GABA and glutamate
- ? May be useful in preventing brain damage after a stroke
- ? Is approved for use in decreasing nausea and increasing appetite
- ? Can decrease pain, but is not approved for this use
- ? Increases risk for PD; for lung cancer (if smoked); possible abuse

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5. **Hallucinogenic Drugs**

- ? Many resemble 5HT molecule and stimulate 5HT_{2A} RS
- ? Others block ACh Muscarinic RS

6. **Alcohol (ethanol)**

- ? Inhibits flow of Na⁺ across cell membrane
- ? Expands surface of cell membrane
- ? Stimulates the GABA RSs
- ? Blocks glutamate RSs
- ? Increases DA activity in neurons
- ? Comparison of Type I (later, gradual onset, less genetic) vs. Type II (earlier, rapid onset, more genetic, more severe, esp. males)
- ? Less 5HT activity in Type II ✗ greater impulsivity, violence
- ? Higher risk for alcohol abuse ✗ sons of alcoholic males, greater resistance to intoxication effects from alcohol, greater relief from tension/stress/anxiety with alcohol use, & smaller R amygdala