**Notes for Neurotransmitters Lecture from**

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Dopamine is very important neurotransmitter and from the figure we could come up with the following conclusions:

**Dopamine antagonists:**

Could give rise to Parkinson like symptoms, but they are one of the best treatment for schizophrenia (e.g: Haloperidole) prevention of nausea and vomiting (Metoclopramide) , but may increase the level of prolactin leading to infertility and gynecomatsia.

**Dopamine Agonists**

Drugs of choice for Parkinson (L-dopa; Bromocriptinee), infertility in women (Bromocriptine) but may lead to psychosis like symptoms and nausea and vomiting N/V as side effects.

**Serotonin**

Serotonin is one of most important neurotransmitter. When its level decreases, this may lead to mood depression, therefore, drugs that inhibit the reuptake of serotonin in presynaptic cleft SSRIs (e.g: Fluoxetine) are drugs of choice for treatment of depression. However, serotonin works at four receptors. Its action on 5-HT1A receptors will be useful for treatment of anxiety (Buspirone); at 5-HT2A receptors leads to impotence and slow ejaculation (used for treatment of premature ejaculation). Stimulation of 5-HT3 receptors leads to nausea vomiting (N/V) and decreases appetite; therefore, 5-HT3 antagonists like Ondansetrone are drugs of choice for treatment and prevention of N/V.

**Note1:** some SSRIs (Mefazodone and Trazodone) also have 5-HT2A antagonistic effect therefore does not produce impotence and instead may give rise to priapism.

**Note 2:** New antidepressants like Mirtazapine (­2-antagonist) increases the level of NE and 5-HT but it has 5-HT2A and 5-HT3 antagonistic activities therefore will not produce impotence or N/V. Thus it is drug of choice for cancer patient as it increases appetite.

**Note 3:** Most new antipsychotic (Antischizophrenic) drugs have high affinity as 5-HT2A antagonists. This affinity at 5-HT2A receptors led to a serotonin hypothesis as an alternative to dopamine hypothesis of the nature of schizophrenia.

**Epilepsy:**

Could be defined as a result of an imbalance between excitatory (Glutamate) and inhibitory neurotransmissions (GABA). Therefore, antiepilepticcs either inhibit or decrease the level of Glutamate or stimulate GABA neurotransmissions.