	Dopaminergic drugs					Anticholinergic drugs (Synthetic atropine substitutes [M1])
	Dopamine precursor	**COMT inhibitors**	**Selective MAO-B inhibitors**	**Dopamine agonists**	**Dopamine Releaser**	
Examples	Levodopa (L-dopa) **(1st Line)**	Tolcapone Entacapone	Selegiline	Bromocriptine	Amantadine **(Anti-viral)**	Benztropine
MOA	**-Dopamine can't cross BBB but L-dopa can.** -**Most** of the administered dose is **decarboxylated into dopamine** in peripheral tissues. **Small** fraction **cross BBB.** -Decarboxylase inhibitor, **carbidopa** (Don't cross BBB), **minimizes peripheral decarboxylation** → ↓ L-dopa dose and adverse effects.	-Reversibly inhibit COMT. -↑ Efficacy of L-dopa and stabilizes dopamine levels in striatum.	-Selective MAO-B inhibitor →**↓breakdown of dopamine** in the brain	-**D2 agonist** Derived from **ergot alkaloids**. -**Compared to L-dopa:** Faster onset, longer duration, No on-off effect	- ↑ **release** of dopamine stored in nerve terminals. -↓ **reuptake** of released **dopamine** by the presynaptic neuron. -Weak **glutamate NMDA receptor antagonist** →↓glutamatergic overactivity .	-Selectivity block central M1. **-Improve tremors** -Little effect on muscle rigidity. **Uses** -Parkinsonism (less effective than L-dopa) -Drug-induced extrapyramidal side effects **(↓ tremors only)**
S/E	**-GIT:** nausea & vomiting **-CNS:** Mood changes, hallucinations and nightmares **-Autonomic:** postural hypotension, arrhythmias (β1), mydriasis.					-**Aggravation of dimentia** in patients with Parkinsonism. -Atropine-like action
	. **-On-off phenomenon** **-Dyskinesia**	**Hepatic necrosis** **(Tolcapone)**	**Insomnia** (Caused by its metabolites)	Pulmonary fibrosis & vasospasm (ergot)	**Skin pigmentation (mottled skin):** VD of capillaries (Livedo reticularis)	
Pharmacokinetics	-Absorbed rapidly from the small intestine. -Short t1/2 (1-2 h) **(may produce on-off phenomenon)** -**L-dopa absorption reduced by amino acids**; take on empty stomach.	———	———	———	———	———

Other Dopamine agonists

Pramipexole

-Not ergot alkaloids.

-Acts as selective D 2-receptor agonists.

-Can **delay the need for levodopa** when used in early stages of PD (younger patient).

-In advanced stages, **reduce the "off" period** and decrease the levodopa dosage requirement.

Apomorphine

-Chemically related to morphine, does not bind to opioid receptors but rather is a dopamine receptor agonist.

-Approved for the **treatment of acute intermittent hypomobility** (freezing) episodes associated with advanced PD **(SC injection)**