Anti-muscarinic anti-cholinergic drugs

- Natural agents:
- **Atropine, Hyoscine**
- Semi-synthetic
- **Homatropine**
- Synthetic
- **Ipratropium, Pirenzepine, Propantheline**

Atropine: Atropa Belladona

Natural Agents Have 2 disadvantages
- Non-selective (Block all Muscarinic receptors)
- tertiary Amines (can pass through BBB
-N-

will have central + side effects

* if we want to make a substitute for Atropine that doesn't pass through BBB then we'll Make quaternary drugs

Pharmacodynamics

Exocrine glands: at low doses reduced secretions

Salivary
Bronchial
Sweat glands

} M_3 Receptor

Blocking of the M_3 causes dryness (using Atropine)

No sweating
No Nasal serebion
No lacrimal serebion

CVS

Depending in the doses

- **Central** effect:
- **Decrease heart rate**
- **Peripheral** effect:
- Blockade of vagus nerve and **increase heart rate**
- **ABP**:
- **No** change

Blood vessels : M_3 (Non-innervated / silent)
so closing won't change Anything

Toxic doses → flushing

Toxic U.D

Respiratory system

- **Bronchodilatation** Broncli : M_3
- **Reduced** bronchial **secretion**
- Ipratropium (quaternary amine derivate of Atropine) inhalation:
- Useful in asthma and chronic obstructive pulmonary disease (COPD), also in patient who are unable to take adrenergic agonists.

M_3 in Bronchi → Bronchoconstriction + increase secretion

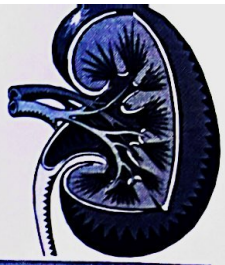
Can be used in Bronchial Asthma

Atropine will inhibit the "Bronchoconstriction" from happening which leaves space for B_2 to work causing Bronchodilatation

* So Atropine caused Bronchodilatation but passively

genitourinal tract

GUT M_3



- **Relaxation of bladder** wall
- Useful in **inflammatory spasm** and **pains** of the urinary tract
- **Risky** in patients with **BPH** (Benign Prostatic Hypertrophy)

urine Retention
closed sphincters
+ Relaxed smooth muscles