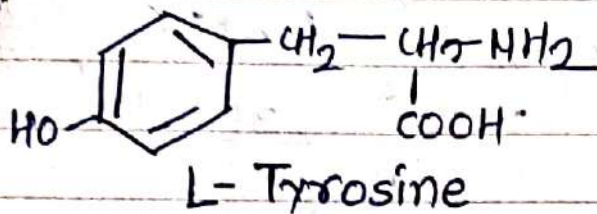


# Biosynthesis, storage & release of NOREPINEPHRINE

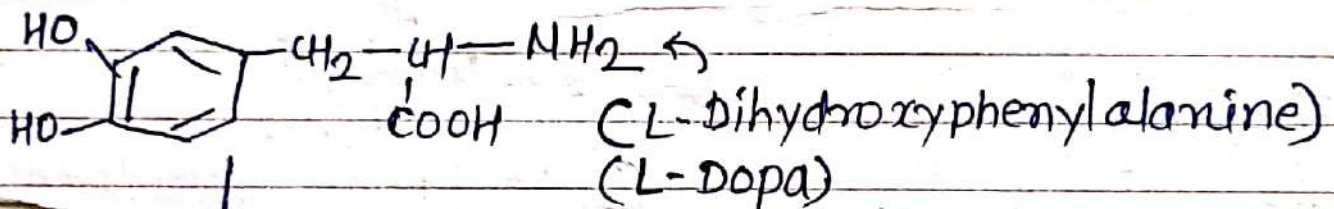
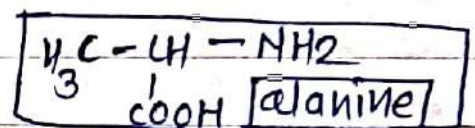
## I Biosynthesis of Dopamine, norepinephrine & epinephrine



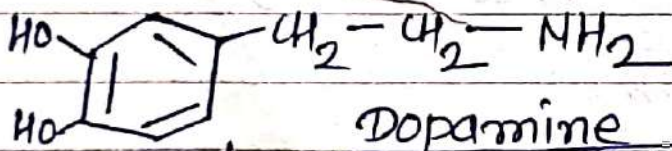
Biosynthesis takes place within adrenergic neurons near the terminus of axon & junction with the effector cell & stored in the vesicles

Rate limiting step

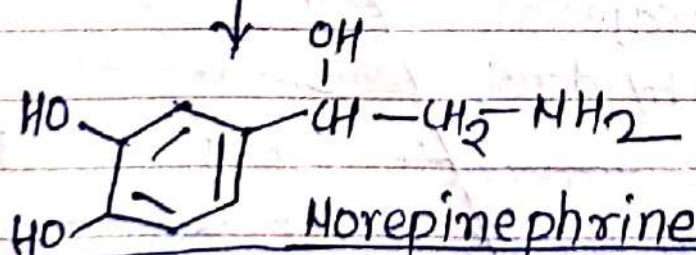
Tyrosine hydroxylase



Aromatic L-amino acid decarboxylase

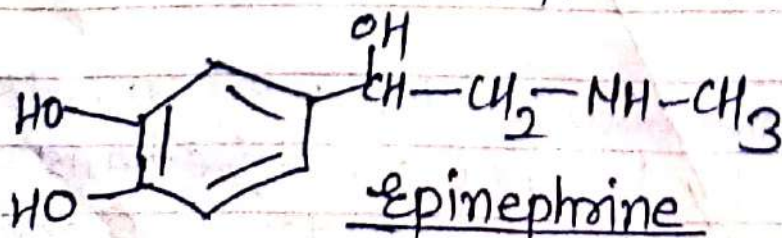


Dopamine β-hydroxylase

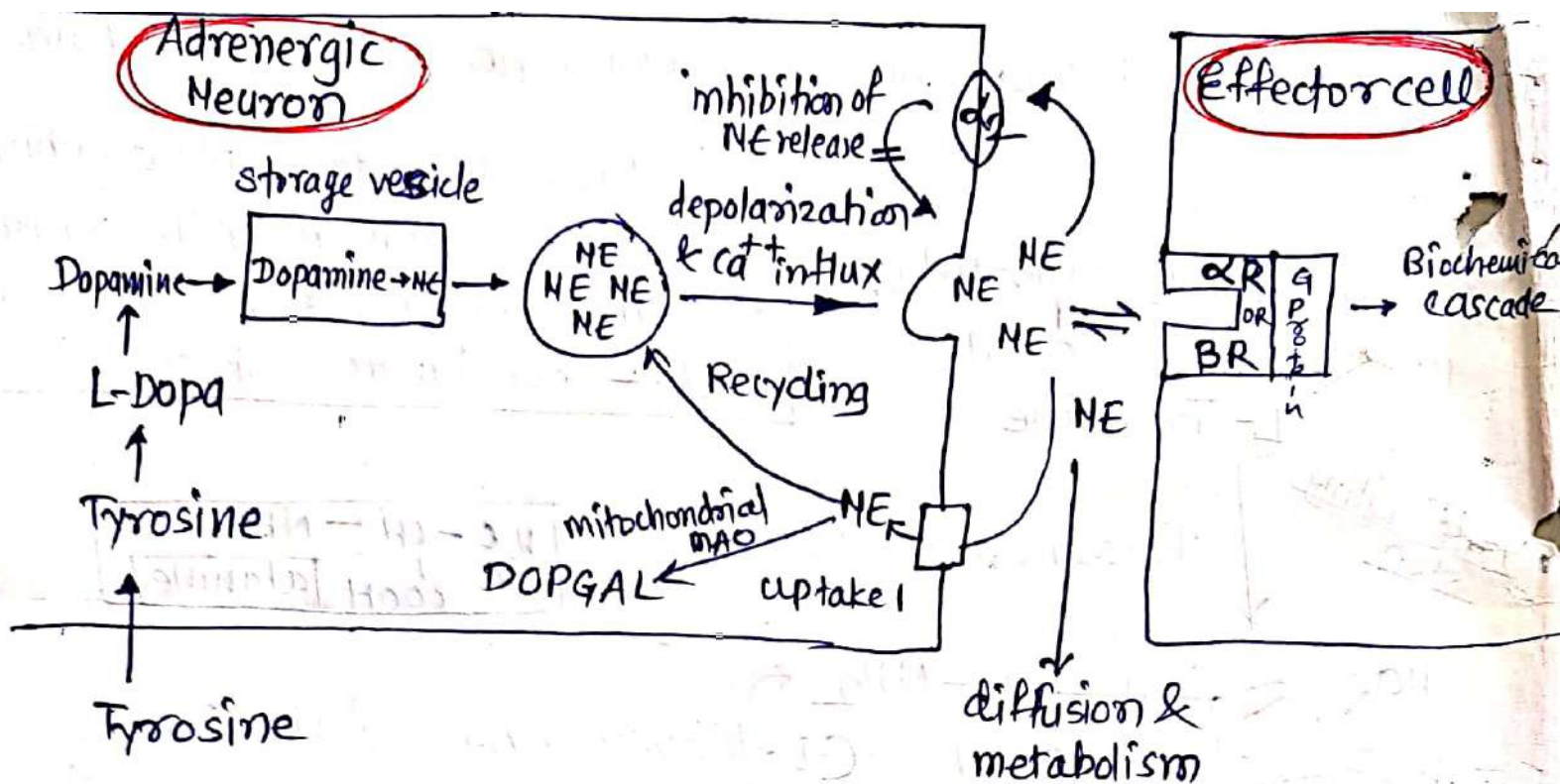


within storage vesicle

Phenylethanolamine N-methyl transferase



The pathway for epinephrine biosynthesis in the adrenal medulla is the same as for norepinephrine with additional step → conversion of NE to epinephrine by enzyme phenylethanolamine N-methyl transferase



(portion of NE not captured by uptake-1 diffuses out of synapse & is metabolised by COMT & MAO)

→ Following biosynthesis & storage in a vesicle, NE release into the synapse is triggered by depolarization-induced  $Ca^{++}$  influx. The NE in synapse interacts with postsynaptic G-protein-linked  $\alpha$  or  $\beta$  receptors on effector cell, triggering effector cell response OR with presynaptic  $\alpha_2$ -receptors on the neuron, which inhibit release of more norepinephrine.

Most of synaptic neurotransmitter is taken back into the presynaptic neuron by uptake-1 active transport. Some NA metabolized by MAO & remainder is stored in vesicle to be used again.