

MEDICINAL CHEMISTRY-I – BP402T

UNIT: 2

CLASS: 4

TOPIC: SAR OF SYMPATHOMIMETICS

SYMPATHOMIMETIC AGENTS

The drugs that produce effects which are similar to the responses from the adrenergic nerves are called sympathomimetic drugs.

Thus they stimulate sympathetic action

SAR OF SYMPATOMIMETIC DRUGS

Catecholamines are structurally phenylethanolamines

It consists of a benzene ring, carbon side chain and a terminal nitrogen

Phenyl ring substitutions

3-OH group is required for alpha activity

4-OH group is required for beta activity

3,4-OH Dihydroxy substitution is required for both alpha and beta activity.

But the only disadvantage of 3,4-dihydroxy substitution is it is easily metabolized by COMT so it produces poor oral activity

3,5-dihydroxy substitution has good oral activity as it could resist the metabolism by COMT

SUBSTITUTION AT CARBON SIDE CHAIN

Small alkyl gp such as methyl or ethyl present at alpha carbon slows down the metabolism by MAO

Ethyl group at alpha carbon decreases activity

Substitution at alpha carbon also introduce asymmetric center into the nucleus producing pair of diastereomers

The beta carbon has OH group which has a maximum direct activity

SUBSTITUTION AT NITROGEN

As the size of the alkyl gp increases activity at alpha receptor decreases and activity at beta receptor increases

RCCP