



MEDICINE
KING SAUD UNIVERSITY



MCQs

SAQs

summary

Drugs used in Depression Old and New groups

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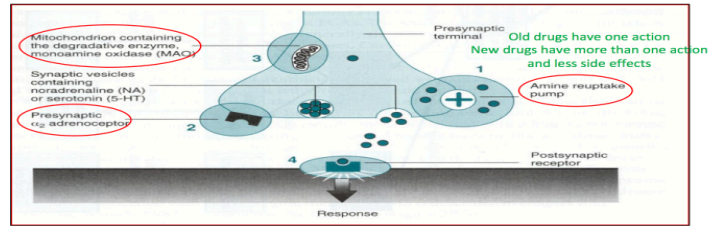


Summary

- Depression happens because of the reduction in the concentration of neurotransmitters in the brain, such as serotonin, NE and dopamine

- **sites of action of anti-depressants**

- 1- Monoamine (NE or/and 5-HT) re-uptake pump inhibitors
- 2- Blockade of pre-synaptic α_2 receptors
- 3- Inhibition of MAO enzyme



5. Drugs that block the reuptake of NE and 5-HT

Tricyclics (TCAs) and **Tetracyclics**
 (**Imipramine**, Nortriptyline, Amitriptyline)
 (**Amoxapine**, **Maprotiline**)

Pharmacological action

Elevate mood, Improve mental alertness
 Increase physical activity

Indications

Chronic neuropathic pains
Imipramine is used for treatment of nocturnal enuresis
 (anti-muscarinic effect)

Their therapeutic effects = (M.O.A)

- Block: α_1 adrenergic receptors - H1 histamines receptors - M1 cholinergic receptors - **5HT2 receptors** cause Dry mouth blurred vision, constipation & urine retention,
- Narrow therapeutic index: toxicity can develop sudden death due to
- Atropine-like effects, **cardiac arrhythmias**
- large volume of distribution** so hemodialysis is not effective for treatment of TCA toxicity

Not given

- **Glaucoma or with enlarged prostate**
- **Seizure disorders(lower threshold)**, Cardiovascular
- **alone in bipolar disease(must be with lithium)**

Drugs interactions :

- Competitive drugs (**Aspirin**) with protein plasma. →increase their effect.
- inducers of liver microsomal enzymes (**Barbiturates**) →reduce effect.
- inhibitors of liver microsomal enzymes (Antipsychotics, and SSRIs) → increase their effect.
- **MAOIs →cause hypertensive crisis**
- **Additive to anti-psychotics and anti-parkinsonism** → increase anti-cholinergic effects.

6. Monoamine Oxidase Inhibitors (MAOIs)

Non- selective

Phenelzine
Tranylcypromine
 Irreversible
 act on MAO A & B

Selective

Moclobemide
 Act on MAO-A
 Reversible
 Antidepressant

Selegiline
 Act on MAO-B
 antiParkinsonism

-limited uses-

used for **refractory cases**, in atypical depression where **phobia and anxiety** are prominent symptoms.

ADRs:

Anti-muscarinic effects , Postural hypotension,
 Weight gain
 With non-selective drugs such as (Phenelzine):
Sexual dysfunction & Hepatotoxicity

Drugs interaction:

Pethidine → **severe hyperpyrexia, restlessness, coma, hypotension.**
Levodopa → **hypertensive crisis.**
TCAs → **hypertensive crisis.**
MAOIs & SSRIs → : **Serotonin syndrome**

Cheese Reaction: Tyramine rich foods + **MAOIs** may result in **hypertensive crisis**, severe hypertension, severe headache and fatal intracranial hemorrhage.

* **Moclobemide: Is the best drug because it is reversible and selective**

Summary

Drugs used in Depression New groups

SSRIs	NaSSA	SARI	SNRIs	NDRI	NRIs
Fluoxetine Fluvoxamine Citalopram Escitalopram Sertraline Paroxetine	<u>Mirtazapine</u>	Trazodone, Nefazodone	Venlafaxine,	Bupropion	Reboxetine
-Most commonly prescribed (first Choice) -do not cause 'cheese' reaction -affect only serotonin - Enzyme inhibitor - Too long T1/2	- <u>α2 receptor antagonist</u> = \uparrow NE \uparrow 5HT -Blocks 5HT2A, 5HT3 = \downarrow 5HT -Block H1	-affect only serotonin -5HT2A antagonists = less sexual dysfunction	- \uparrow NE - \uparrow 5HT	-no direct action on serotonin. - \uparrow NE - <u>\uparrowDA</u> - <u>No sexual dysfunction</u>	-Safe to combine with SSRIs
USES: -premature ejaculation (5-HT2A) -bulimia or Anorexia nervosa (Fluoxetine)	USES: -Preferred cancer patients (<u>weight gain</u>)	(<u>Serotonin Modulators</u>)		USES: - <u>smoking cessation</u> -ADR: Seizures	-side effects related to ADR system (tremor, tachycardia, urinary hesitancy, \uparrow BP)

NT	effect
\uparrow serotonin	Sexual dysfunction , weight gain
\downarrow histamin	sedation,
NE	Cardiovascular effects
\downarrow Ach	Anticholinergic effects

Drug interactions		
SSRIs not be used with TCAs	SSRIs potent inhibitors of liver microsomal enzymes	inhibit TCAs metabolism increasing their <u>toxicity</u>
SSRIs not be used with MAOIs	Both same effect	<u>serotonin syndrome</u>

Summary

MAO Class	Drugs
Tricyclics (TCAs) and Tetracyclics (inhibit reuptake of <u>NA &5TH</u>)	Imipramine, Amoxapine, Maprotiline, Nortriptyline, Trimipramine, Clomipramine, Protriptyline, Desipramine, Amitriptylin , Doxepin
<u>Selective Serotonin</u> Reuptake Inhibitors (SSRIs)	Fluoxetine, Fluvoxamine, Citalopram, Sertraline, Paroxetine, Escitalopram
Monoamine Oxidase Inhibitors (<u>MAOIs</u>)	Tranlycpramine, Phenelzine, Moclobemide
<u>Serotonin And Noradrenaline</u> and Reuptake Inhibitors (SNRIs)	Venlafaxine, Duloxetine
Serotonin-2 Antagonist and Reuptake Inhibitors (SARIs)	Nefazodone , Trazodone
Noradrenergic and Specific Serotonergic Antidepressant (NaSSAs) (Block presynaptic alpha 2 & block 5HT3/5HT2A)	Mirtazapine
<u>Noradrenaline</u> Reuptake Inhibitor (NRI)	Reboxetine
Norepinephrine and <u>Dopamine</u> Reuptake Inhibitor (NDRI)	Bupropion

MCQs

1- Which antidepressant has, as its two principle mechanisms of action, 5-HT_{2A} receptor antagonism and α ₂ receptor antagonism?

- A. Fluoxetine B. Mirtazapine C. Moclobemide

2- Which one of the following Monoamines inhibitors is preferred in treatment of depression, without any food restricted?

- A. Moclobemide B. Phenelzine C. Tranylcypromine

3- Which of following Antidepressant drugs have an effect on Dopamine reuptake ?

- A. Fluoxetine B. mirtazapine C. Bupropion

4- A women visited the clinic with her 7 years son, she complains that he can't control himself during night and always wakes to wet sheets even though he's fine during the day. What would you recommend for him?

- A. Imipramine B. Amitriptyline C. Clomipramine

5- 45 years old diabetic man visited the hospital complaining of pain and numbness of his feet for the last 5 weeks. What is the recommended treatment for his case?

- A. Mirtazapine B. Amitriptyline C. Trazodone

6- 35 years old man with history of Epilepsy visited the psychiatrist for his depression. Which of the following drugs should be AVOIDED?

- A. . Imipramine B. Bupropion. C. Both of them

7- 30 years old women visited the psychiatrist complaining of depression, severe Anxiety and phobia. Which of the following is recommended for her?

- A. Moclobemide B. Phenelzine C. Tranylcypromine

8- Which of the following drugs is safe to combine with Fluoxetine?

- A. Imipramine B. Reboxetine C. Moclobemide

Answers:
1- B
2- A
3- C
4- A
5- B
6- C
7- A
8- B

9- 39 years old man with prostate cancer visited the psychiatrist seeking help with his depression, and he was suffering from loss weight and vomiting, What would you recommend ?

- A. Fluoxetine B. Imipramine C. Mirtazapine

10- 40 years old man came to the hospital complaining of withdrawal symptoms after trying to quit smoking. Which of the following drugs would help his symptoms?

- A. Venlafaxine B. Reboxetine C. Bupropion

11- A 18-year-old Women presents with symptoms of Bulimia nervosa. She eat a large amounts of food and then purge, trying to get rid of the extra calories in an unhealthy way, even if she was eating only a small snack or a normal-size meal.” He realizes that his behavior is interfering with his ability to accomplish his daily tasks but cannot seem to stop himself. Which of the following drugs would be most helpful to this patient?

- A. Fluoxetine B. Imipramine C. Mirtazapine

12- A 51-year-old woman with symptoms of major depression also has angle-closure glaucoma. Which of the following antidepressants should be avoided in this patient?

- A. Bupropion B. Amitriptyline C. Mirtazapine

13- A 55-year-old teacher who is recently married began to experience changes in mood. He was losing interest in his work and lacked the desire to play his daily tennis match. After 6 weeks of therapy with fluoxetine, his symptoms resolved. However, the patient complains of sexual dysfunction. Which of the following drugs might be useful in this patient?

- A. Bupropion B. Mirtazapine C. Both of them

14- A 32-year-old male who is recently married, he complains of premature ejaculation. Which of the following drugs might help him to delay the ejaculation ?

- A. Fluoxetine B. Imipramine C. Trazodone

Q1) 15 years old girl visited the psychiatrist with her mom complaining of loss of appetite and a sever low BMI.

1- What would be the best treatment for her case?

Fluoxetine

2- Mention two classes of drugs that should not be combined with her treatment and why.

TCA: because they can inhibit metabolism and increase toxicity

MAOI: because of the risk of " Serotonin syndrome"

3- Mention 2 side effects of her treatment.

Drowsiness , nausea& vomiting ... etc.

4- this drug can be used as antidepressant, Explain its mechanism of action?

It is act as selective serotonin reuptake inhibitor.

5- list some of its advantages as antidepressant drug?

The Most commonly prescribed antidepressants

- Less cardiovascular and anticholinergic side effects compared to TCA.
- In contrast to MAOI, they do not cause 'cheese' reaction
- Safer (low risk of overdose and Acute toxicity) is less than that of MAOI or TCA

Q2) 30 y/o man was diagnosed with depression and was prescribed Moclobemide.

1- what is the type of Moclobemide?

Selective monoamine-A inhibitor (selective MAO-A inhibitor)

2- mention two side effects.

Postural hypotension , weight gain , sedation ...etc.

3- what would happen if Moclobemide combined with the following:

- **Levodopa:** Hypertensive crisis
- **SSRIs :** serotonin syndrome
- **Tyramine:** No reaction (it has no cheese effect)

Q3) Why do we prefer Mirtazapine in Cancer patients?

Due to its effects on these patient:

- 1) Improves appetite.
- 2) ↓ nausea & vomiting (5-HT₃ blocking)
- 3) ↑ body weight (appetite stimulant).
- 4) Sedation (potent antihistaminic)
- 5) Less sexual dysfunction (5-HT₂ blocking)
- 6) Has no anti-muscarinic effect