Fluphenazine (Modecate): MOA, Uses, Dosage, Side Effects

Fluphenazine is a first-generation antipsychotic drug used in the management of psychosis and schizophrenia. It is a dopamine receptor antagonist (neuroleptic). Fluphenazine belongs to a class of phenothiazines and has a high affinity for dopamine D2 receptors.

It is a highly potent phenothiazine having a piperazine side chain. has marked extrapyramidal effects.

Trade names
This drug is sold under the following trade names;

Modecate, Modecate Concentrate, Prolixin, Moditen, RhoFluphenazine

Mechanism of action of fluphenazine

It is postulated that they cause their effects by blocking dopamine (D1 and D2)receptors in the central nervous system. Depressing the release of hypothalamic and hypophyseal hormones.
From the dopamine hypothesis in the causes of schizophrenia or psychosis disorders. it is thought that the disorder is caused by an excess of functional activity of dopamine in the specific neuronal tracts in the brain.

Fluphenazine has a higher affinity for dopamine D2 receptors that are located in the caudate-putamen, nucleus accumbens, hypothalamus, and cerebral cortex.

Other pharmacological actions seen in varying degrees include cholinergic, adrenergic, histaminergic, and serotogenic blocking activity. However, the exact mechanisms of action is unknown.

When it is administered to a normal person it causes emotional quietening, indifference to surroundings, and sedation. When in psychotic use, it decreases agitation, aggressiveness, and tends to bring behavior towards normality.

Its administration may cause movement disorders. all have minimum autonomic effects and are less likely to cause hypersensitivity reactions, jaundice, and convulsions in epileptics.

Indications of Fluphenazine

Fluphenazine is indicated in management disorders such as

1. Schizophrenia,
2. Mania
3. Organic brain syndrome

Dosage and administration

Adults;

Fluphenazine hydrochloride.

The initial dosage is 2.5 to 10 mg/day orally divided 6-8 hourly.

Then the maintenance dose is 1-5 mg orally or intramuscularly divided 6-8 hourly. The maximum daily dose of fluphenazine hydrochloride is 40 mg

Fluphenazine decanoate

The initial dose is 16.25-25 mg intramuscularly or subcutaneously every two weeks until a steady-state effect is achieved. At this point, a single injection can last for 4-6 weeks.

If the patient needs a higher dose, then the dose can be repeated or increased cautiously every one to three weeks, in increments of 12.5 mg.

The maintenance dose is 50 mg and the maximum dose is 100mg/day.

Pharmacokinetics and pharmacodynamics

Fluphenazine has a good bioavailability due to its rapid absorption.

The onset of action is 1 hour for fluphenazine hydrochloride and 24 to 72 hours in decanoate.

It is highly lipid-soluble and therefore able to enter into the central nervous system and other tissues as well.

The duration of action is 6-8 weeks for Fluphenazine hydrochloride salt and 4 weeks for Fluphenazine decanoate.

The peak plasma time for hydrochloride salt is 2 hours and for decanoate is 8-10 hours.

The Peak effect is between 48-96 hours.

Fluphenazine is eliminated in urine snd feces.

The elimination half-life of hydrochloride salt is 14-16 hours and decanoate is 14 days.

Contraindications

Fluphenazine is contraindicated in;

- Coma,
- Drowsiness,
- Extrapyramidal reactions,
- Hepatic and renal disease.

Adverse effects

Confusion,

Decreased gag reflex,

Insomnia,

- Dry mouth,
- Nausea,
- Epigastric distress,
- Seizures,
- Hypotension,
- Tachycardia,
- Weight gain,
- Erectile dysfunction,
- Sedation.

Other uncommon effects are,

- Electrocardiogram changes,
- Pruritus,
- Diarrhea,
- Photosensitivity,
- Blood dyscrasia.

Extrapyramidal symptoms associated with Fluphenazine are;

- Akathisia,
- Dystonia,
- Dyskinesia,
- Muscle stiffness,
- Tardive dyskinesia-The syndrome is characterized by involuntary choreoathetoid movements that variously involve the tongue, face, mouth, lips, or jaw, trunk, and extremities.
- Parkinsonism
- Neuroleptic malignant syndrome

Special Precautions

Precations measures should be observed when using this drug in patients with;

Epilepsy, intestinal obstruction, cardiovascular disease, pheochromocytoma, cerebral damage.

Drug Interaction

Alcohol: It may cause central nervous system depression, extrapyramidal reactions

Alluminium salts; they decrease efficacy, therefore, antacids should be given one hour before or two hours after administration of fluphenazine

Anticholinergics; decrease efficacy and increase the anticholinergic side effects of fluphenazine

Barbiturates decreases efficacy

Barbiturate anesthetics; increase frequency and severity of neuromuscular excitation and hypotension.

Bromocriptine. Fluphenazine decreases the effects of bromocriptine by pharmacologic antagonism.

Norepinephrine; pressor effect decreased peripheral vasoconstrictive effect antagonized. Epinephrine and fluphenazine both increase QTc interval.

Lithium; disorientation, unconsciousness, and extrapyramidal symptoms.

Meperidone; excessive sedation and hypotension.

TCAs serum concentration increased by fluphenazine.

Propanolol; Increased plasma levels of both drugs

Monoamine oxidase inhibitors; Additive orthostatic hypotensive effective effect.

Laboratory Tests; Pregnancy tests; false-positive results

Plasma bound iodine (PB); increased plasma bound iodine occurs