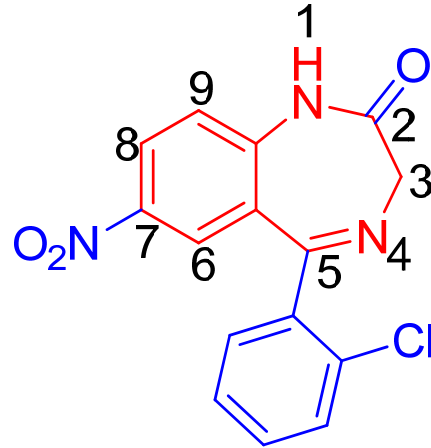


# Clonazepam



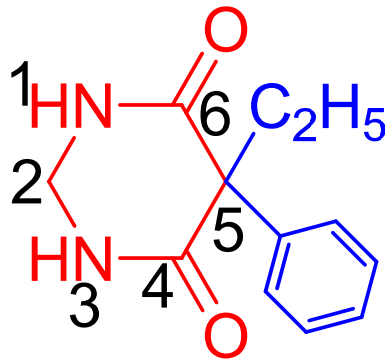
## MOA

Clonazepam can bind to benzodiazepine receptors that are components of various varieties of GABA(a) receptors. This binding acts to enhance the effects of GABA by increasing GABA affinity for the GABA(a) receptor, which ultimately enhances GABA ligand binding at the receptors. This enhanced ligand binding of the inhibitory neurotransmitter GABA to the receptors increases the chloride ion conduction (via an increase in the frequency of the chloride channel opening), resulting in a hyperpolarized cell membrane that prevents further excitation of the associated neuron cells.

## Uses

Clonazepam may also be of some value in patients with absence spells (petit mal) who have failed to respond to succinimides. Additionally, clonazepam is also indicated for the treatment of panic disorder.

# Primidone



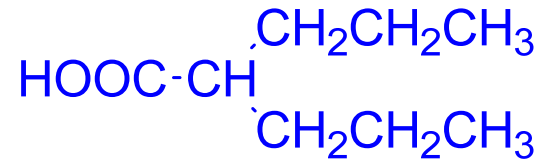
## MOA

Primidone does not directly interact with GABA-A receptors or chloride channels but phenobarbital does. Primidone alters transmembrane sodium and calcium channel transport, reducing the frequency of nerve firing, which may be responsible for the primidone's effect on convulsions and essential tremor.

## Uses

Primidone is commonly indicated for the management of grand mal, psychomotor, and focal epileptic seizures.

## Valproic acid



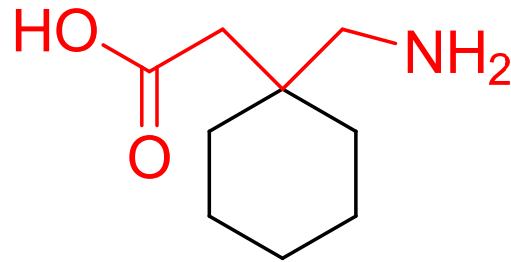
### MOA

The exact mechanisms by which valproate exerts its effects on epilepsy, migraine headaches, and bipolar disorder are unknown however several pathways exist which may contribute to the drug's action.

Valproate is known to inhibit succinic semialdehyde dehydrogenase. This inhibition results in an increase in succinic semialdehyde which acts as an inhibitor of GABA transaminase ultimately reducing GABA metabolism and increasing GABAergic neurotransmission. As GABA is an inhibitory neurotransmitter, this increase results in increased inhibitory activity. A possible secondary contributor to cortical inhibition is a direct suppression of voltage gated sodium channel activity.

- ❖ As monotherapy or adjunctive therapy in the management of complex partial seizures and simple or complex absence seizures.
- ❖ Prophylaxis of migraine headaches.
- ❖ Acute management of mania associated with bipolar disorder.

# Gabapentin



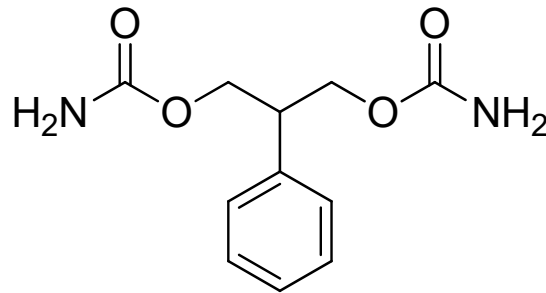
## MOA

Gabapentin is a structural analogue of the inhibitory neurotransmitter gamma-aminobutyric acid. The precise mechanism through which gabapentin exerts its therapeutic effects is unclear. The primary mode of action appears to be at the auxiliary  $\alpha 2\delta$ -1 subunit of voltage-gated calcium channels. Gabapentin appears to inhibit the action of  $\alpha 2\delta$ -1 subunits, thus decreasing the density of pre-synaptic voltage-gated calcium channels and subsequent release of excitatory neurotransmitters.

## Uses

Gabapentin is officially indicated for the treatment of neuralgia in adults and for the adjunctive treatment of partial-onset seizures.

## Felbamate



### MOA

The mechanism by which felbamate exerts its anticonvulsant activity is not clear. However, *in vitro* receptor binding studies suggest that felbamate may be an antagonist at the strychnine-insensitive glycine-recognition site of the N-methyl-D-aspartate (NMDA) receptor-ionophore complex. Antagonism of the NMDA receptor glycine binding site may block the effects of the excitatory amino acids and suppress seizure activity.

### Uses

For use only in those patients who respond inadequately to alternative treatments