Dextromethorphan

Dextromethorphan is a codeine analog and weak opioid. It works as an NMDA receptor antagonist and is primarily used as a cough suppressant. Adverse effects include serotonin syndrome and drug overdose. Although uncommon, a drug overdose of dextromethorphan can be treated with naloxone, an opioid receptor antagonist.



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Mechanism

Codeine Analog
Coding-hacker On-a-log
Dextromethorphan is a synthetic codeine analog that acts as a weak opioid receptor agonist.

Weak Opioid
Weak Poppy-droid
Dextromethorphan acts as a weak opioid agonist and therefore its opioid effects and the potential for addiction are low compared to other opioids. If an overdose occurs, it can be treated with naloxone.

NMDA Receptor Antagonist
NMDA Receptor Ant-toga
Another unique mechanism of this drug is antagonism on NMDA receptors. NMDA receptors are ionotropic receptors that depolarize the neuron in response to activation by glutamate. Since this drug acts as an excitatory amino acid antagonist, it prevents neuronal damage and modulates pain sensation.

Uses

Cough Suppressant
Coughing Coffee-pot Suppressed
Dextromethorphan is primarily used as a cough suppressant and can be found in many over-the-counter cough syrups. This is accomplished by depressing the medullary cough center through sigma receptor stimulation.

Adverse Effects

Serotonin Syndrome
Silver-tonic Savage
Since dextromethorphan inhibits serotonin reuptake, patients are at increased risk of serotonin syndrome, especially if they are taking serotonergic medications such as SSRIs.

Drug Overdose
Overdose Pill-bottle
Although rare, drug overdose is possible in patients taking huge quantities of dextromethorphan.

Naloxone
Nail-lock
Dextromethorphan poisoning is uncommon and in rare cases can be associated with respiratory depression, especially in young children. In severe cases of dextromethorphan overdose, naloxone can be considered given its antagonistic action on opioid receptors.

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