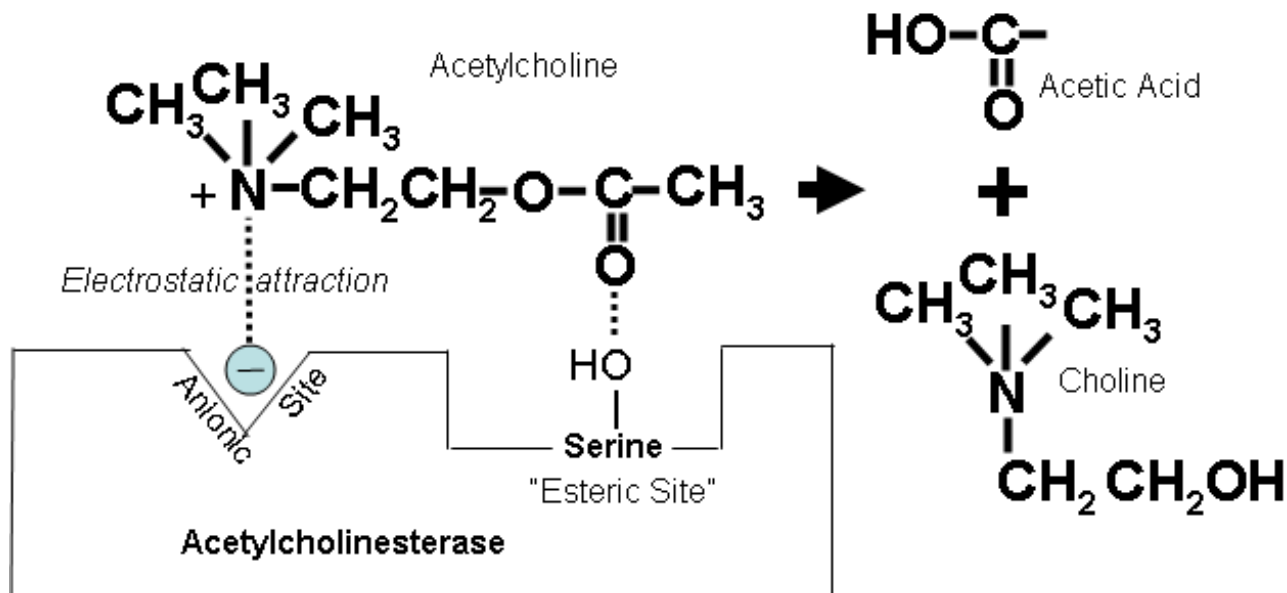


ORGANOPHOSPHIDES POISONING

DR SHOHREHAZIKI

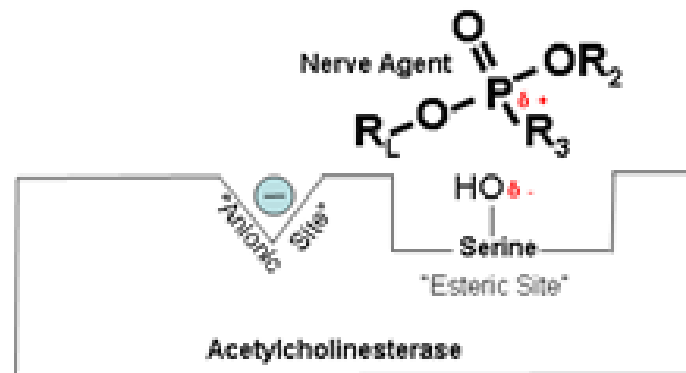
PHARM D & PHD IN TOXICOLOGY

How does AChE act?



- The entire process takes about 150 microseconds
- True AChE – nervous tissue, surface of RBCs.
- ButyrylChE/PseudoChE- serum, liver.

What do OP do?

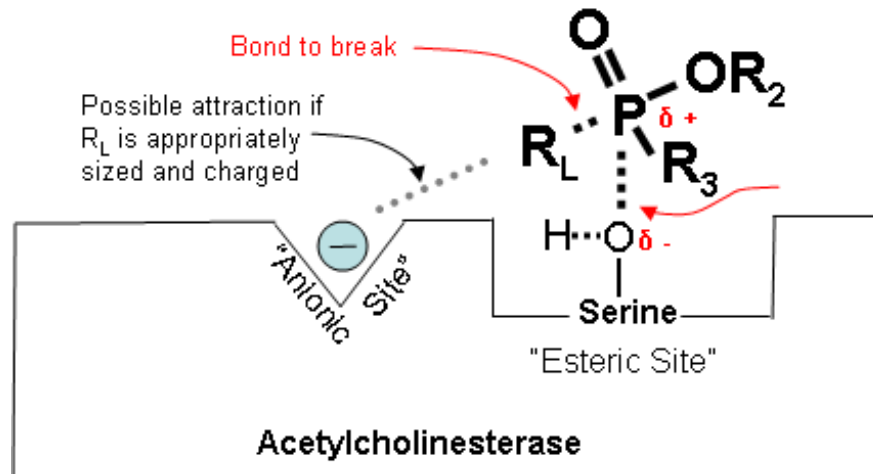


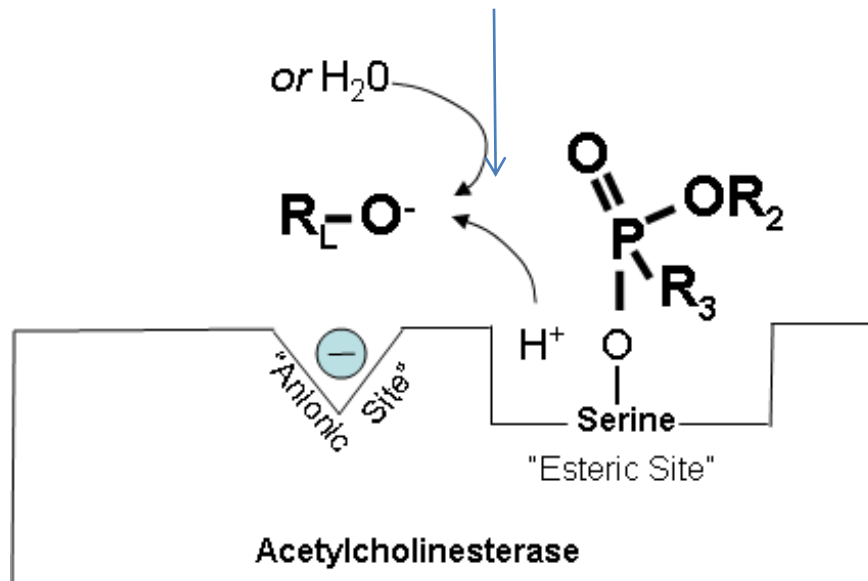
Alkyl phosphorylation of Serine-OH group at the esteric site of enzyme.



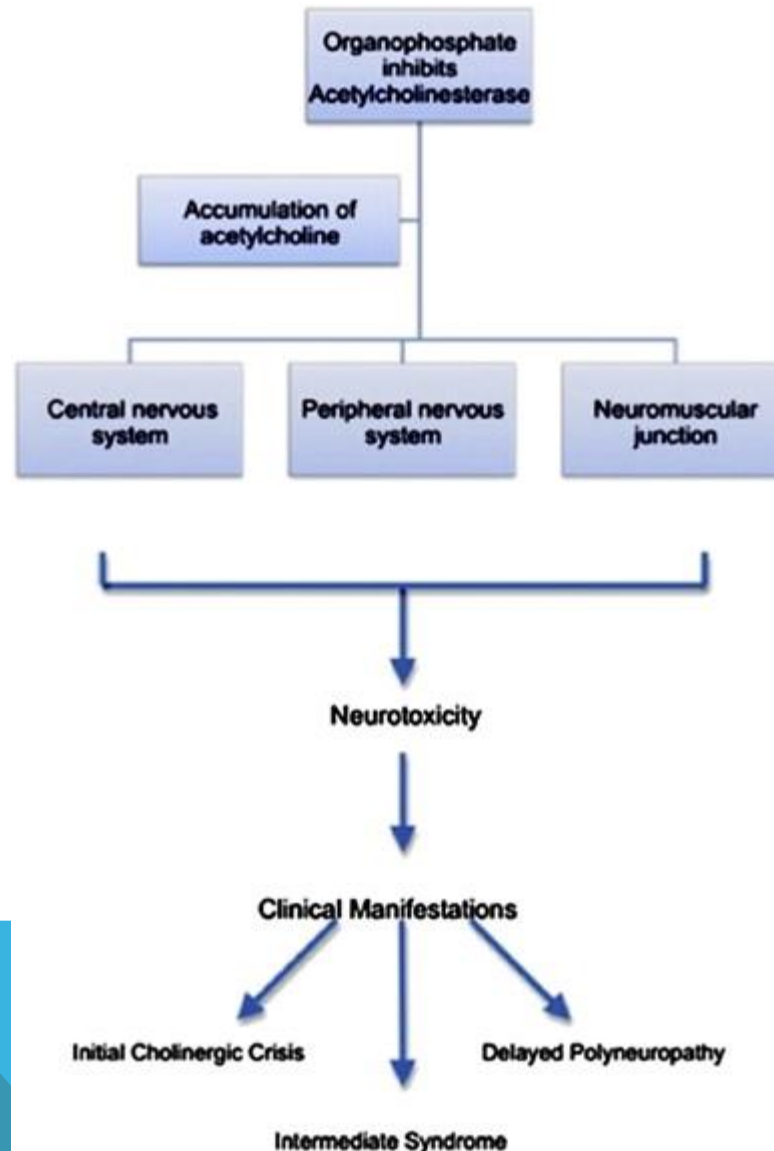


"Transition state"





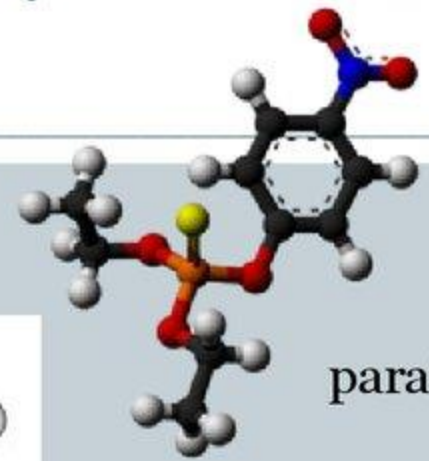
- Forms an irreversible covalent phosphate linkage
- Extent of inhibition of AChE depends on the rate constant for the reaction and the time that the enzyme is exposed to the drug



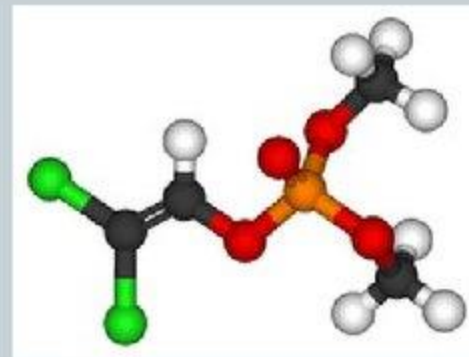
Chemical names for organophosphates active ingredients



- Methyl parathion
- Ethyl parathion
- Malathion
- Diazinon
- Fenthion
- Dichlorvos
- Chlorpyrifos
- Trichlorfon



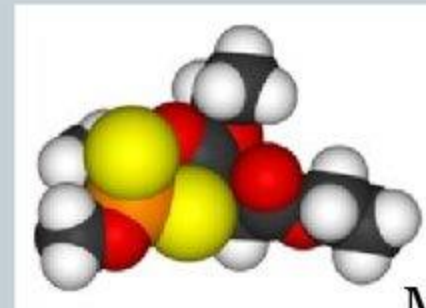
parathion



Dichlorvos



Chlorpyrifos



Malathion

SIGNS & SYMPTOMS

MUSCARINIC	NICOTINIC	CNS
CVS : Bradycardia, Hypotension	SYMP GANGLIA : Tachycardia Hypertension	Anxiety, ataxia, restlessness, tremors, insomnia
LUNGS : ↑ secretions Bronchoconstriction	SKELETAL MUSCLE: Fasciculations, cramps, weakness, paralysis, resp arrest	Convulsions , coma, absent reflexes
EYES : Miosis ↑ lacrimation Blurred vision	Mydriasis	
GIT : ↑ salivation Vomitting Diarrhea		
SWEAT GLANDS : ↑ sweating		
BLADDER : ↑ urination		

DUMBELS

Diarrhea,
 Diaphoresis
 Urination
 Miosis
 Bronchorrhea
 Bronchospasm
 Bradycardia
 Emesis
 Lacrimation
 Salivation

TREATMENT

- The skin washed with alkaline soap and water
- Remove clothes
- Intubation , ventilation , continuous suctioning
- Antidotal therapy
- rapid atropinization
- IV fluid in adult Diazepam (10 mg / iv) , midazolam (5-10 mg / im)(seizure)
- In pediatric 0.1-0.2 mg/kg iv diazepam , 0.1-0.3 mg/kg midazolam IM

ANTIDOTE

- Atropine : 1-2 mg/iv
- Doses are doubled every 5 min

ANTIDOTE

- Oxime therapy
- Regenerate active acetylcholinesterase
- Pralidoxime (protopam) ,obidoxime (toxogonin)
- Reverse nicotinic sign and symptoms
- Carbamylated acetylcholinestrerase will spontaneously hydrolyze within 24h
- Oxime therapy is recommended for all op and carbamate exception carbaryl

INEFFECTIVENESS OF OXIMES

- Insufficient oxime
- Aging (Oximes are of no benefit if started after 24 hrs of onset of OP poisoning)

PIRALIDOXIME DOSAGE

- WHO recommended 30 mg/kg pralidoxime iv followed by iv infusion 8 mg/kg/h

ADVERES REACTION OXIME THERAPY

- Hypertension
- Nausia and Vomiting
- increases in Neuromuscular block
- Obidoxime – transient liver damage
- In pregnancry is category C

Adverse effects of oximes

- Transient increase in neuromuscular block
- Nausea, vomiting following the bolus dose
- Pralidoxime -ECG changes
- Obidoxime – transient liver damage

Thank You

shutterstock.com · 780491263