

1. SUMMARY

Originally organophosphorus compounds were used as pesticides. Unfortunately, their irreversible inhibition of AChE was discovered, and they were widely misused as warfare agents.

Presently, there is not a reactivator good enough to reverse completely irreversible inhibition of AChE. Thus, especially for military purposes, it is very important to look for better reactivators.

As the reactivators can both reactivate inhibited AChE and inhibit the intact AChE, they have also been tested as potential therapeutics for Alzheimer's disease.

New modification of oxime group with $-NH_2$ was tried for better reactivation or inhibition results compared to widely used conventional drugs. Also monoquaternary and bisquaternary modifications were tested for possible improvement in activity. Wide range of substances was synthesized, which differed in homologous unit $-CH_2-$. Thus substances with short aliphatic side chains, with partly hydrophilic properties, and those with long chains with mainly lipophilic properties as well as bisquaternary derivatives with various linking chains between two pyridinium centers were prepared and tested.

Unfortunately these modifications did not prove to have any positive effect on activity or on inhibition.

Some substances have shown mild reactivation possibility or inhibited AChE at low concentrations but if compared to therapeutically already use drugs, the activity is not significant.