SUMMARY AND CONCLUSION

A series of 2-(O-alkyl)-6-nitro-4H-1,3,2-benzodioxa-phosphorin-sulphides and a 2-(O-phenyl) compound analogous to Salithion (2-methoxy-4H-1,3,2-benzodioxaphosphorin-2-sulphide) were synthesised and examined for alkaline hydrolysis, anti-cholinesterase activity in human blood plasma as well as in housefly-head preparation and oral toxicity to cockroaches and rats.

Methoxy compound showed greater insecticidal activity than Salithion and other compounds to cockroaches; iso-propoxy derivative showed 1.5-2 times less insecticidal activity than Salithion; Phenoxy derivative was non-insecticidal. All compounds were less toxic to rats than Salithion. Iso-propoxy compound was most stable in alkaline hydrolysis; but all the compounds had greater hydrolysis constant value than Salithion. It was observed that for all compounds except phenoxy one, the acetyl-cholinesterase of housefly-head homogenate (HFAChE) was more inhibited than that of human blood plasma (AChE), the methoxy compound was most toxic to HFAChE, but the iso-propoxy compound was least toxic to AChE.

The structures of all compounds were established by chemical analysis, UV, Mass, IR and ^{1}H NMR spectral data. Mass

fragmentation processes and the splittings in ^{1}H NMR signal at δ = 5.4 ppm of (β-methoxy) ethoxy and (β-ethoxy) ethoxy compounds were entirely different from that of other alkoxy compounds; ether type oxygen in exocyclic side chain plays an important role in this class of organophosphorus compounds.