

## **CONCLUSION**

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Although the conclusions that can be drawn from this study has been somewhat influenced to some degree by the large variation in the activities in control animals for both AChE as well as EROD activities, some observations may be made which may contribute to the knowledge of biomarkers of exposure in the brain and liver of *T. trichopterus* in response to the organophosphorous insecticides chlorpyrifos and diazinon. Both the concentration of the insecticide as well as the period of exposure exert effects on the brain AChE activity in *T. trichopterus*. The extent of the anticholinesterase activity of the OPs are markedly different.  $I_{50}$  values for chlorpyrifos and diazinon were found to be  $3.9 \times 10^{-1}$  M and  $4.6 \times 10^{-4}$  M respectively which indicates that diazinon is a more potent anticholinesterase agent to fish brain AChE. The study showed that the period of recovery for the test species is dependent on the duration of exposure and concentration of the insecticides. Repeated exposure as observed in the study also contribute to the ability of the test species to recover from previous exposure. Exposure to low concentrations of insecticide also resulted in stimulatory effects and hence preclude the use of AChE activity as a tool to monitor exposure to OPs at very low concentrations.

The work also clearly shows the inducibility of the *T. trichopterus* EROD activity in the liver after exposure to both insecticides though the aqueous route as adapted in this study is not the most widespread method to induce the MFO system. Unlike the brain AChE activity, the level of induction of EROD activity in the fish liver was found to be dependent neither on the concentration nor the duration of exposure

to the insecticides. Test species exposed to chlorpyrifos only exhibit EROD activity induction after the initial exposure to the insecticide while diazinon was observed to induce EROD activity in test species after each 24 hr exposure, suggesting that maximum induction of EROD activity in test species has already occurred following the first exposure to chlorpyrifos. Therefore, the inducibility of EROD activity also appear to depend on the insecticide involved.

Throughout the study EROD activities observed ranged between ( $0.08 \times 10^{-6}$  -  $27.05 \times 10^{-6}$  moles/min/mg protein), presumably attributed by inter individual variation in test animals. Therefore it would appear that EROD activity as a biomonitoring tool may not be practical.