SUMMARY
1. The experimental fish *Labeo rohita* is a commercial food fish was collected from the local fish farm and adapted to the laboratory conditions.

2. The fish was adapted separately at normal (25°C) (lab) temperature, higher (35°C) and lower (15°C) temperature through time course experiment. The entire data of this investigation on malathion toxicity was analysed in three different categories namely normal, higher and lower temperature adapted fishes.

3. Toxicity studies were conducted to determine the LC₅₀ (TLM) values of malathion, through probit analysis and the LC₅₀ values in ppm are found to be 5.433 in normal (25°C), 4.850 in higher (35°C) and 6.117 in lower (15°C) temperatures indicating that malathion toxicity increases with increasing temperature, in that it is more potent and effective, hence more toxic to this fish at higher temperature than lower temperature.

4. From the LC₅₀ values of malathion, approximately one third value of LC₅₀ i.e. 1.0 ppm was chosen as common and safe sub-lethal concentration of malathion at all temperatures. For all the further physiological
analysis of this investigation normal, higher, lower adapted fishes exposed to 1 ppm sub-lethal concentration of malathion for a period of 30-days and fishes in fresh water without malathion served as controls at each temperature.

5. The time course in the rate of $O_2$ consumption of this carp *Labeo rohita* during sub-lethal exposure of malathion at all the different temperatures exhibit an initial shoot up at the 24-hrs exposure period. This initial increase in $O_2$ consumption of the carp might be attributed due to increased locomotory activity arising out of animal's tendency to escape from the stress media. This situation is termed as 'escape reaction' of the animal. Later there is gradual decline in 7-day period followed by a maximal decrease at the middle period, but $O_2$ consumption raised towards the end of malathion exposure i.e. at 30-day exposure period from its earlier maximal decrease, reaching nearer to the control medium, indicating the capacity of this fish to recover from sub-lethal exposure of malathion. Thus the sub-lethal concentration (1 ppm) of the pesticide could cause a physiological system ($O_2$ consumption) to oscillate outside its normal range of variations, mostly suppressive, yet with time (within 30-days) the $O_2$ consumption could show
indications of its return to the normal state without suffering lasting effects leading to the maintenance of homeostasis during malathion exposure.

6. Oxygen consumption and RBC number are suppressed maximally in this fish at the 15-day sub-lethal exposure period of malathion and exhibited a fairly good amount of recovery in O₂ consumption and RBC number at the 30-day sub-lethal exposure period of malathion, indicating impairment of oxidative metabolism in the first half of malathion exposure which could be resulted due to prevalence of hypoxic conditions during malathion exposure. Thus there is a linear relationship between O₂ consumption and RBC number in this fish, in that, whenever there is decrease in O₂ consumption there is a corresponding decrease in the RBC number and vice versa, suggesting that the O₂ uptake is directly dependent upon the number of RBC which when considered together could serve as sensitive and good indicators of pollutional stress at sub-lethal level in checking pollution at a stage when remedial measures are possible.

7. The symptoms of poisoning are conspicuously seen in this fish during malathion exposure. The changes in opercular activity served as a good indicator of
pollution-stress with reference to malathion.

The behavioural symptom in this carp during malathion exposure i.e. opercular activity also raised initially at 24-hr period, then there is a suppression through 7-day period and a maximum % suppression is recorded at 15-day period. But in the later half of the 30-days period, the opercular activity increased towards the end of 30-day period, reaching nearer to normal value.

The symptoms of poisoning like, change in colour of the fish, changes in pectoral fins, change in gill colour, secretion of mucus, abdominal changes and surfacing phenomenon, are more pronounced during LC₃₀ exposure of malathion and these symptoms also served as good indicators of malathion toxicity.

6. Temperature is found to have profound effects on the potency and toxicity of malathion in this carp, thus the % mortality, hence the LC₃₀ value, the extent of suppression in O₂ consumption, RBC number, opercular activity and other symptoms of poisoning at 15-day malathion exposure are significantly greater in higher temperature (35°C) fish than in lower (15°C) temperature adapted ones but the extent of recovery in the said physiological systems at 30-day period of sub-lethal exposure of malathion is significantly greater in
lower (15°C) temperature adapted carp than in higher (35°C) temperature adapted ones. Hence malathion is found to be more potent, effective and toxic at higher temperature. Thus these temperature differences in this carp during malathion exposure revealed that the toxicity of malathion increases with increasing ambient temperature.