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SUMMARY AND CONCLUSION
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The previously mentioned in the introduction the use of pesticides especially in agriculture has grown to an extent were the ill-effects have become widespread and obvious. The entry of such chemicals have had a effect on in polluting the environment and indisturbing the physiological processes of the living organisms of such an environment.

Reverting to the catalogue of concerns created by the continues use of pesticides, the experience gained, points towards:

1] Contamination of sources of water both over ground or under-ground including the fog and rain-water.
2] Damage to beneficial soil micro-flora including earthworms, etc.
3] Large scale bird or fish kills, including interference with reproductive functions in wild life.
4] Contamination of food, including, animal feeds, soil and air.
5] Serious health related problems with special risks to children.
7] Negative impact on plant biodiversity.
8] Threat to ozone layer.

The net result is the environmental persistence and bioaccumulation accentuated specially on account of overuse in homes, gardens, golf courses etc. Additional problems have been created by use of so-called 'inert' ingredients used in pesticides, specially in sprays.

Various types of pollutants are present in different forms, in the atmosphere. Out of these pollutants, one is the pesticides. There are various means through which pesticide residues reach the environment.
and pose hazards to the aquatic and other organisms resulting from the excessive use of pesticides. The proper and safe use of pesticides will be ensured only by a good knowledge of their physiological properties. The different features of application and the knowledge of their toxicological characteristics and behaviour in biological media need to be reviewed. Malathion is one of the most widely used organophosphorus insecticides in every field of life. It's ill-effect are here studied on albino rats, as this species has striking resemblances to human beings in physiology.

In view of these hazards due to excess of organophosphorus insecticides, the present study was undertaken to advocate a minimal economic threshold for pesticides and threshold tolerance of the rat, *Rattus norvegicus*.

The probit analysis method was used to calculating the expected mortality of the animals. LD$_{50}$ values were decreased constantly with a corresponding increase in the exposure period. These values were higher on the first day and lower on the 30$^{th}$ day of treatment. This clearly indicates that very low concentrations was also toxic to the rat, *Rattus norvegicus*.

The behaviour of animal is a highly adaptive response to environmental variables of physical, chemical or biological nature. The behavioural responses of the rat varies in accordance to the test concentration. The onset of symptoms in behavioural changes were noted after each exposure of a sublethal concentration of malathion.

The changes of various enzymes in liver and kidney tissues of the rat, *Rattus norvegicus* exposed to the sublethal concentration of
malathion at different intervals, were recorded. From the observations, it is evident that there were distinct variations in different enzyme activities with the sublethal concentration of the pesticide and the exposure periods.

The values of tissue enzymes such as acetylcholinesterase, acid phosphatase and alkaline phosphatase showed the inhibition with different exposure periods (1-12 days) in a sublethal concentration of malathion treated rat. Then after at 18-24 days the values of acetylcholinesterase content were found to increase near about control level and showing a recovery trend.

The estimation of tissue protein content revealed that there is a declining trend in the values of these constituents from 1 to 18 days and from 24 to 30 days elevated results are seen when exposed to a sublethal concentration of malathion. The result of soluble and insoluble protein estimations have been found to be decreased at 1 to 6 days and elevated at 12 to 30 days continuously. The acidic and alkaline protein estimations reveal that there is a continuous elevation in the values of these constituents.

In the liver and kidney, the estimation of glucose suggested that their values decreased at 1 to 6 days and showed elevation at 12 to 30 days exposure to the sublethal concentration of malathion of rat, *Rattus norvegicus*.

The histopathology is a common asset for determining the effect of pollutant on an organism and hence histopathological observations were studied on liver and kidney exposed to malathion in sublethal concentration, in rat, *Rattus norvegicus*. In liver, the hepatic

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chords were disrupted, hepatic cells show picnotic nucleus, vacuolation, hyperplacis condition. Hepatic cell wall ruptured with haemorrhage bile pigments were seen more in increase exposure period.

Also kidney treated with malathion in sublethal concentration in rat, *Rattus norvegicus*, showed dilated tubules, vacuolations and thin brush border of kidney tubule. Destruction of canaliculi and vesicles were seen in the apical cytoplasm.

Instead of elongated mitochondria, small vesicular mitochondria are observed. Polyanionic surface coat of normal podocyte processes are transformed into elongated tubular form due to the toxic effect of malathion. Glomerular epithelium and endothelium become thin and vacuolation is also seen inside the glomerulus.

The observations as noted in the rat, *Rattus norvegicus* indicated that the liver enzyme activity was altered to the maximum extent. As liver is the main site of detoxification, the toxic substances while poisoning through it, might have drastically changed its cellular and enzymatic profile. Next to liver, the kidney was also found to be affected more by the pesticide. The sensitivity of kidney to malathion in rat, *Rattus norvegicus* appeared to be relatively greater in tolerance or a better protected mechanism in kidney to combat the hazards of pesticides resulting in sustained enzyme.

With all humility, the author would like to state that these efforts might not have been a total success in gaining full insight into the subject but they shall definitely count as noteworthy, through a small contribution towards the existing reservoir of literature devoted to the

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reporting of the knowledge for human concern.

Further study is needed to understand any genetic effect on the next generation to maintain the race and genetic pull.