

Summery of the UGC major project 1916-1918)

“ Assessment of Genetic DNA damage in the agricultural workers exposed to combined action of pesticides in selected districts of Assam.” F.No.43-345/2014(SR)

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1.The study was conducted to evaluate the Genotoxic damage in workers employed in agricultural field in the Barpeta and Kamrup district and compared to control during 2016-17-18

2 (a) To investigate the combined action of pesticides on the health of the agricultural workers of certain districts of Assam.

(b) To evaluate the extant of DNA damage and repair in the peripheral blood lymphocytes of agricultural workers by Comet Assay(SCGE).

3) Methodology consist of A)Preliminary survey in the eight places of Barpeta and Kamrup districts.

B)Collection of Blood samples from the agricultural workers and process in the laboratory.

C) Application of Comet Assay and comet length was measured, length of comet indicate type of damage of DNA due to the effect of mixture of pesticide on the health of the workers.

4.The result of the study indicated that occupational exposure to complex mixture of pesticides induces a significant increase in the level of DNA damage in the lymphocyte of the worker exposed to pesticides.

4.This result may be due to cumulative effects of all or some of the pesticides . it is not possible to attribute the DNA damage of the worker exposed to pesticides to any particular agent.

5.Long term exposure can act as clastrogen of the DNA of somatic cells and detected DNA damage could be due to cytotoxic and genotoxic effect.

6.Comet assay was used in this investigation .Comet tail length could be possibly originated from DNA single strange breakage, repair of DNA double strange breakage, DNA adduct formation, DNA-DNA, DNA protein cross linkage. Occupational exposure to xenobiotics may result in their covalent binding to DNA which may lead to chromosomal alteration.

7.It could be a initial effect in the process of chemical carcinogenesis.

8.It causes Cancer risk and genetic illness. Again metabolize of agricultural chemical which may not be effected by detoxification mechanism, may accumulate and contributing to tumourogenesis.

9.Genetic damage may be due to long term exposure and insufficient protective measure taken by the exposé worker.

10.Bio monitoring studies of the pesticide expose population are rather specific because different populations have different lifestyle, nutritional habit, climatic and environmental condition and exposed to mixture of different pesticides.

11.This may explain why some exposure in human gives positive results and other some gives negative results.

12.Complex mixture of different pesticides have a more genetic effect than a single pesticides since DNA damage is a important stage leading from carcinogen exposure to cancer. Our study represent important contribution to the current evaluation of potential health risk associated with agricultural chemical exposure.

Conclusion

1.It may be concluded that awareness among the farmers and the general peoples are essential who handle the toxic pesticides against the health risk of the exposure of these harmful effect of pesticides.

2.Government should ban the harmful toxic pesticides and carcinogenic grade 1 pesticides immediately and regular monitoring is required about the use of pesticide not only in the two district of Assam, Barpeta and Kamrup. but all the districts of ASSAM.

3. Alternative of the pesticides- like Neem cake, Herbal pesticides, Integrated Pest Management should be encourage among the public specially the farmers who handle pesticides in the agricultural field.