ASSESSMENT OF HUMAN EXPOSURE TO PESTICIDE - A SURVEY

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ABSTRACT

Organophosphate and carbamate pesticides poison insects and mammals by inhibition of cholinesterase enzyme activity. This enzyme is critical for normal control of nerve impulse transmission from nerve fibers to muscles and gland cell. Depressions of serum acetylcholinesterase enzyme activities are biochemical indicator of excessive organophosphate absorption. A survey was conducted from 1993-94 to 1998-99 to study the effect of pesticide exposure on the level of human blood cholinesterase in the persons engaged in the pesticide business from the Faisalabad district. The persons selected for blood sampling were classified into three different categories i.e. pesticide dealers, spray men and pesticide laboratory staff. A total of 116 blood samples were collected from Faisalabad and adjoining areas. Blood serum was separated and analyzed spectroscopically by following kinetic test. Out of 116 samples, 60 (52 percent) have a cholinesterase level within normal range (3.5-11.4 KU/L) while 56 (48 percent) below normal range. Out of 12 pesticide dealers surveyed, 3 (25 percent) were within normal range and 9 (75 percent) below normal range. Out of 77 spraymen samples, 39 (51 percent) were within normal range and 38 (49 percent) below normal range. Among the pesticide laboratory staff, 18 (67 percent) were within normal range and 9 (33 percent) below normal range. Higher percentage of persons with depressed cholinesterase level is considered the result of inadequate protective measures adopted during handling and long time exposure to pesticides. Adoption of proper safety measure and care during working with the pesticide can help alleviate their adverse effect on health.

Key words: Organophosphate insecticides, Cholinesterase enzyme, pesticide exposure, Agricultural workers, Survey.