

ABSTRACT**The Effect of Organophosphate Pesticide Exposure on Serum Cholinesterase Activity and Liver Function Spraying Apple Farmers in the Bumiaji Village Sub-district Bumiaji, Batu City**

Organophosphate pesticides are insecticides that are widely used in developing countries such as Indonesia. One of the areas in Indonesia where agriculture is increasing is Batu City particularly Bumiaji Village. Batu City is a center of apple plantations thus known as Apple City. Apple plantation in Bumiaji Village use organophosphate pesticides to control pests. The use of organophosphate pesticides can harm our health because it can inhibit the activity of serum cholinesterase. The long-term impact of this pesticide is impaired liver function. Diagnosis of liver function can be applied to the liver function tests to see an increase in activity of enzyme markers of liver damage such as Serum Glutamic Pyruvic Transaminase (SGPT), Alkaline Phosphatase (ALP), Gamma Glutamyl Transferase (GGT). This aims of this study are to analyze the effect of organophosphate pesticides exposure on serum cholinesterase activity and liver function in spraying apple farmers in the Bumiaji Village, Sub-District Bumiaji, Batu City. This study includes observational research with cross sectional design. The samples are 40 samples consisting of two groups. 20 samples of the group exposed to pesticides and 20 samples of the group not exposed to pesticides. Samples were analyzed using multiple linear regression techniques. The results showed a dose usage is not appropriate ($p < 0.05$) and the amount of pesticide effect on cholinesterase activity ($p < 0.05$). Liver function tests showed the amount of pesticides ($p < 0.05$) and duration of spraying ($p < 0.05$) effect on the activity of Serum Glutamic Pyruvic Transaminase (SGPT). The more the dose and the number of species that use caused the lower serum cholinesterase activity. Dose, type of poison, and long exposure to toxins may increase the activity of enzymes that become markers of liver damage.

Increased outreach and technical assistance from the Department of Agriculture and Department of Health to run private safe use of pesticides. Routine examination of serum cholinesterase activity and liver function by the Departement of Health or the Health Center also need to be done regularly. The last, Notification of the label before use and use of personal protective equipment also important.

Keywords : Organophosphate pesticide, cholineterase, liver function tests, Batu City