

SUMMARY

THE EFFECTS OF WOOD DUST LIPOPOLYSACCHARIDE (LPS) ENDOTOXIN LEVEL ON INCREASING INTERFERON GAMA (IFN-) IN BLOOD SERUM AND DECREASING LUNGS FUNCTION OF SURABAYA WOOD PROCESSING PLANT

The rapid development of timber processing factory in Indonesia has a positive impact on the social life of the community in the form of increasing the breadth of jobs, ease in communication, transportation and eventual socio-economic impact on the community but on the other hand the processing plant potential to cause contamination of the air in the workplace are also endanger workers the Seara continuously working on the job site for 8 hours of work in the form of the dangers of wood dust inhaled especially if the wood dust contains endotoxin lipopolysaccharide.

Previous epidemiological studies show an effect to exposure to wood dust inhaled by workers wood processing can affect lung function decline while endotoxins are biological agents found inorganic dust. Endotoxin exposure may cause inflammation of the respiratory tract. Refers lipopolysaccharide endotoxin (LPS) found in the outer membrane of Gram-negative bacteria. Previous epidemiological study stated that endotoxin can affect Interferon Gamma (IFN-) and lower lung function.

The purpose of this study was to analyze the effect of endotoxin LPS to increased levels of IFN- in blood serum and lung function decline in part sawmill workers in the wood processing plant

As a research methodology, researchers applied the method of analytic observational prospective Logitudinal design. This research was conducted in the wood processing plant in Surabaya Margomulyo for 3 months. The population in this study were all workers at the sawmill which consists of 30 workers while the study sample were 11 workers were determined by simple random sampling. As data collection techniques, researchers conducted interviews, personal dust measurements, personal endotoxin measurement, take blood samples, and perform spirometry tests. IFN- levels and lung function measured at the time before and after work (cross-shift). IFN- blood serum and lung function as the dependent variable in this study. Meanwhile, private endotoxin levels as independent variables. Age, smoking habit and long work as a confounding variable. Personal dust level was measured using the Personal Dust Sampler (PDS). Meanwhile, levels of endotoxin obtained from a private wood dust was measured using ELISA techniques and methods Lymulus Amebocyte Lysate (LAL) and lung function (FVC and FEV) were checked using a spirometer (Spirolab III). IFN- levels were assessed using fluorescence immunoassay I Chroma TM 1 Reader. The process of data analysis was done by descriptive and analytical. Inferential data analysis performed using Multiple regression. The findings of this study indicated that the average age of workers were 27.45 years old and most of them were worked for 5.73 years, and 64% of workers were light smokers. After working for 8 hours, found the average exposure of private wood dust 2.93 mg/m³ and average personal

endotoxin levels was as much as 91.00 EU/m³. average of IFN- γ in the blood serum of workers were 7.64 mg/l, or about 81.8% while the decline in FVC and FEV1, respectively 63.6% and 81.8%. Personal endotoxin levels did not have an effect on increasing blood serum IFN- γ (multiple regression test, $p>0.05$), but have an effect on decreased lung function(multiple regression test, $p<0.05$).

It was concluded that wood dustcontainsendotoxin LPS did not have affects the increase inblood serum IFN- γ but have effect ondecreased function of the respiratory system health. Regular analys to be done for early detection of short-term changes in the respiratory system of workers. There for , workers with a high risk of respiratory disease can be treated earlier.

