ABSTRACT

An Increase of Tumor Necrosis Factor-Alpha (TNF-α) Level and Polymorphonuclear (PMN) Cells in Nasal Lavage Liquid of Rice Mill Operator Exposed to Lipopolysaccharide Endotoxin

Lipopolysaccharide endotoxin in rice dust is a risk factor of increase of TNF-α, PMN cell, decrease of pulmonary function and respiratory complaint of the rice mill operators. The aim of this study was to analyze the level of LPS endotoxin in personal dust, TNF-α level, the number of PMN cells in Nasal Lavage Liquid (NAL), and the decrease of pulmonary function even respiratory complaints of the rice mill operators. The sample of the study was 11 operators of rice mill. The data of the study was obtained by interviewing in order to analyze the workers’ characteristics and their respiratory complaints, measuring the level of personal dust by utilizing personal Dust Sampler (PDS), and measuring the pulmonary function by utilizing spirometer. The TNF-α level and LPS endotoxin were analyzed by utilizing ELISA technique, afterwards, LPS was analyzed by utilizing LAL method, and for the PMN was analyzed by utilizing leukocyte count method. The study result showed the average of dust level was 2,20 mg/m3, and the LPS endotoxin was 54,4 EU/m3. Moreover, it was occurred the increase of TNF-α level and the number of PMN which was 100%. The decrease of FVC was 72,73% and FEV1 was 63,64%. The mild respiratory complaints was 9,09% and for the medium one was 90,01%. The obstruction pulmonary function was 36,36% and restriction was 27,27%. Therefore, LPS endotoxin had significant influence toward the increase of TNF-α level and the number of PMN cells in worker’s NAL (p=0,000). Besides, LPS endotoxin significant influence toward the decrease of FVC and FEV1. Conclusion: There are increase of TNF-α level and the number of PMN cells in NAL after working. The lipopolysaccharide endotoxin also influence toward the decrease of pulmonary function of the rice mill operators. Suggestion: some preventions should be done are by using a machine of rice mill which could gather dust, ventilation, proportional workplace, by checking health periodically for workers, and by using mask while working. Keywords: LPS endotoxin, nasal lavage, PMN, pulmonary function, respiratory complaint, rice mill operator, TNF-α.