

Publications

Soni P., Pingle S. K., Tumane R. G., Jawade A. A. *Study on Protein Biomarkers in Municipal Solid Waste exposed Workers*. In the proceedings of International Conference on Molecules to Systems Physiology (ICMSP 100), Kolkata.

Abstract:

The collection of municipal waste is the greatest and most diverse set of all occupational hazards from waste management aspects. The major toxic content like endotoxin is most important component of bioaerosols and it is assumed to cause a non specific inflammation of the airways which is very common to several diseases. This study aims to investigate the early diagnostic biomolecules for the identification of onset of the disease.

In this study, Municipal Solid Waste exposed workers (n=25) and control group (n=25) from different occupationally exposed environment were selected as subject. Population characteristics and exposure factors were correlated in this study. To see the expression of protein, SDS-PAGE was done in blood serum of MSW workers. Over expression of 32.4 kDa unknown protein fraction was observed in MSW workers blood serum. The integrated and non-specific biomarkers are expressed due to exposure of biological infective agent like bioaerosol, heavy alcohol consumption and mixtures of toxicant in their workplace.

The observed band can be use as an early disease diagnostic biomolecules. Further studies are recommended to explore studies on 32.4 kDa protein.

Key Words: Biomarker, Municipal solid waste (MSW), Sodium Dodecyle Sulphate Poly Acrylamide Gel Electrophoresis (SDS-PAGE).

An overview of caspase: Apoptotic protein for silicosis

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Abstract

Silicosis is a chronic lung disease characterized by granulomatous and fibrotic lesions, which occurs due to accumulation of respirable silica mineral particles. Apoptosis is an important phenomenon of cell death in silicosis. The relationship between silica dust and its exposure is well established. But, the complex chain of cellular responses, which leads to caspase activation in silicosis, has not been fully discovered. Caspase activation plays a central role in the execution of apoptosis. Silica-induced apoptosis of the alveolar macrophages could potentially favor a proinflammatory state, occurring in the lungs of silicotic patients, resulting in the activation of caspase prior to induction of the intrinsic and extrinsic apoptosis pathways. Recent studies indicated that apoptosis may involve in pulmonary disorders. This review summarizes the current knowledge about the underlying mechanism of biochemical pathways in caspase activation that have been ignored so far in silicosis. In addition, caspase could be a key apoptotic protein that can be used as an effective biomarker for the study of occupational diseases. It may provide an important link in understanding the molecular mechanisms of silica-induced lung pathogenesis.

Keywords: Apoptosis, caspase, DNA adduction, Fas/FasL, occupational diseases and silicosis