A Study of Oxidative Stress in Bidi Industry Workers from Solapur City
A.N. SURYAKAR, R.V. KATKAM, V.N. DHADKE AND R.B. BHOGADE

ABSTRACT
Workers in bidi industry are constantly in contact with tobacco powder. Illnesses like cancer, asthma, chronic bronchitis, backache, joint pain and arthritis are reported to be common among bidi workers. These disorders induced by tobacco dust and nicotine absorption seems partly be mediated by increase in oxygen free radicals. The present study was carried out to assess exposure effects of tobacco on oxidant and antioxidant status which may induce related health hazards. 90 bidi industry workers and 30 healthy controls were screened for serum lipid peroxide (MDA) and serum nitric oxide (NO\(_{\text{\text{\textdegree}}}\)) as oxidants and superoxide dismutase, glutathione peroxidase, glutathione reductase and catalase as antioxidants. Total antioxidant status was also measured. These bidi industry workers were divided in three groups. Group I included workers with 5 to 9 years exposure to tobacco dust while group II and III workers were exposed to tobacco dust for 10 to 14 years and 15 to 19 years, respectively. Highly significant increase in serum MDA and NO\(_{\text{\text{\textdegree}}}\) was observed in all groups of bidi industry workers as compared to controls. The erythrocyte-SOD activity was found to be significantly decreased in group III workers. Our study demonstrated significant decrease in glutathione peroxidase, glutathione reductase and catalase activity as well as in total antioxidant status of groups II and III workers. From present study, it is evident that tobacco dust exposure induced oxidative stress among bidi industry workers. As duration of exposure was increased, the effect was enhanced. This resulting oxidative stress may contribute to respiratory disorders observed in these workers.

Key words: Tobacco dust, Oxidative stress, Antioxidants

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