

ISSN 0972-3757

International Journal of

HUMAN GENETICS

© Kamla-Raj 2015

PRINT: ISSN 0972-3757 ONLINE: 2456-6360

Int J Hum Genet, 15(3): 97-119 (2015)

DOI: 10.31901/24566330.2015/15.03.02

Oxidative DNA Damage, Oxidative Stress and Genetic Susceptibility-Prognostic Scores in 'Missing' COPD Cases

Gursatej Gandhi and Gurpreet Kaur*

Department of Human Genetics, Guru Nanak Dev University, Amritsar 14300, India

**E-mail: gk_chahal@yahoo.co.in*

KEYWORDS Genetic Polymorphism. Glutathione-S-Transferase. 8-OHdG. Stone-crushing Superoxide Dismutase

ABSTRACT *In situ* identification of COPD cases at workplace and sample assessment for oxidative stress/ DNA damage as a function of metabolic/antioxidant genotypes (as susceptibility genotypes) offers a novel manner of hazardous workplace-identification for genotoxic/carcinogenic events. In this case-control study, blood/ sera samples of the COPD cases (n=32 identified spirometrically among the stone-crushing workers) and healthy controls (n=19) were assessed for 8-OHdG (DNA damage), glutathione and superoxide dismutase levels (oxidative stress) and genotyped for *GSTT1*, *M1*, *P1* and *MnSOD* variants. Significant increase in oxidative damage and lung-function decline were observed as a function of some genotypes. Predictors of genetic damage included tGSH, SOD and *GSTM1*. A prognostic index score based on prognostic factors was developed revealing cases were at high- (53.12%), intermediate- (34.37%) or low- (12.50%) risk for progressive DNA damage. These aberrant findings imply workplace exposure. This study provides insight on exposure-effect relationship in workers at stone-crushing sites.