

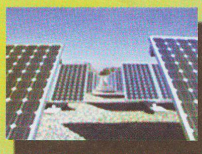
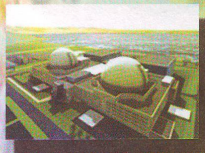
98th Indian Science Congress

3-7 January 2011 CHENNAI

Section of
New Biology (including
Biochemistry, Biophysics
& Molecular Biology and
Biotechnology)

President

Dr. Hasi Das



THE INDIAN SCIENCE
CONGRESS ASSOCIATION

Dr. B. G. Upreti
Area Coordinator (Bio Sciences)
Department of Science & Technology (CSIR)
Department of Science & Technology (Govt of India)

Associative Study of GST Gene Polymorphism and Lung Function Decline in Coal Miners

B. G. Unni¹, Minakshi Bhattacharjee¹, Sangeeta Das¹, Anamika Das Chutia¹, P. K. Baruah², T. Borah², S. B. Wann¹, P. G. Rao

¹Biotechnology Division, North-East Institute of Science and Technology (CSIR), Jorhat 785 006, Assam

²Clinical Centre, North-East Institute of Science and Technology (CSIR), Jorhat 785 006, Assam

E-mail: bgunni@rrljorhat.res.in

Keywords : GST, Open cast coal mine, Lung function decline, COPD.

Chronic obstructive pulmonary disease (COPD) ranks twelfth in the global burden of disease, but according to recent estimates it has been predicted to rise to the fifth highest burden by 2020. One of the risk factors for developing COPD is on account of the environmental triggering in genetically susceptible individuals. Atmospheric pollution from anthropogenic sources such as coal mining, industrial sources is a serious worldwide concern as it is associated with adverse health effects. This research work has been carried out to study the relative prevalence of the disease amongst the people residing in the vicinity of Open- cast coal mine areas in Assam and also to trace out the genetic susceptibility to the disease in the population. Extensive survey was carried out in the Open- cast coal mine areas in Assam and data were recorded in questionnaire formats by close interaction with the local people with their consent. Blood samples were collected (random sampling) from large number of villagers residing very near to the coal mine through health camps conducted in the area; and spirometry was carried out. There was significant air pollution in the study site and pulmonary function decline was observed amongst most of the villagers exposed to the study site. GSTM1 null type was significantly associated with lung function decline in smoker groups and the presence of at least one active allele (either GSTM1 /GSTT1) seemed to have a protective role in the development of COPD. GSTM1(null genotype) appears to be a risk factor for the rapid decline in lung function in smokers. The impact of potentially injurious environmental and other factors such as smoking status, respirable mixed coal dust will be presented and discussed.