



Alterations in Glutathione Levels as a Marker of Oxidative Stress in Smokers

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ABSTRACT : Background : Cigarette smoking has been implicated as a significant risk factor for the initiation and establishment of several diseases like coronary artery disease and associated with high incidences of morbidity and mortality.

Aim: To assess total-sulfhydryl, protein bound-sulfhydryl and non-protein bound-sulfhydryl group levels and glutathione metabolizing enzyme such as glutathione reductase activity in serum of smokers and coronary artery disease patients in comparison with that of healthy non-smokers and to ascertain whether chronic smoking is an initiator of oxidative stress or not.

Material and Methods: 75 subjects were recruited in the present study which were divided into three groups; in group-1: 25 known coronary artery disease patients, in group-2: 25 subjects of smokers were recruited and in the group-3: 25 normal healthy non smokers were recruited from the north Indian population of Punjab. Fasting blood samples were taken from all the subjects of three groups for the determination of total-sulfhydryl, protein bound-sulfhydryl and non-protein bound-sulfhydryl levels and glutathione reductase activity.

Results : A significant ($p=0.001$) reduction in total-sulfhydryl, protein bound-sulfhydryl and non-protein bound-sulfhydryl group levels and glutathione reductase activity was observed in coronary artery disease patients (Group-1) and smokers (Group-2) in comparison to normal healthy non-smokers (Group-3). A statistical no significant decrease was recorded in glutathione levels and glutathione reductase activity in smokers (Group-2) as compared to coronary artery disease patients (Group-1).

Conclusion: These observations suggested that smoking induced the oxidative stress by reducing the glutathione levels and glutathione reductase activity, might be responsible for the pathophysiology of coronary artery diseases in the younger generation.

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