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Assessment of oxidative stress of platelets among chronic heroin and hashish addicts.

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Abstract: INTRODUCTION: Illicit drugs abuse is associated with several clinical life-threatening consequences that are primarily mediated by oxidative damage to multiple cellular components with a subsequent cellular dysfunction and death. Primarily, this study aimed to investigate oxidative stress to protein and lipid components of circulatory platelets among chronic heroin and hashish addicts. METHODS: Platelet lysates were prepared from 20 chronic intravenously administrated heroin addicts and 20 chronic smoked hashish addicts. For comparative purposes, two control groups of 20 cigarette smokers and 20 nonsmokers were included in the study. Oxidative stress to platelet's proteins and lipids was investigated using carbonyl group contents assay and thiobarbituric acid reactive substances (TBARS) assay, respectively. RESULTS: In comparison to control groups, carbonyl group contents and TBARS concentration were significantly higher among heroin addicts but not among hashish addicts. Both of these markers were significantly correlated to the duration of addiction but not to the daily administrated dose. While in regard of the timing of the latest administrated dose (TLAD), only carbonyl group contents were significantly correlated to the TLAD. CONCLUSIONS: Considering the contribution of drug's route of administration, drug's pharmacokinetics, and kinetics of circulatory platelet, we concluded that chronic heroin addiction is associated with significant levels of oxidative stress to platelet's proteins and lipids. Due to the high proteomic contents of platelets, protein's oxidative stress is more prominent compared to lipids. Chronic hashish smoking is not associated with significant levels of oxidative stress in platelet's proteins and lipids.