TIME COURSE OF BLOOD ETHANOL, NICOTINE AND CARBONMONOXYHAEMOGLOBIN IN YOUNG MALE DRINKERS IN A QUASI-SOCIAL ENVIRONMENT

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Many Australians regularly consume both ethanol and cigarettes and the disease risks of each habit are well documented. These behaviours are usually considered independently despite the evidence that they covary with the heaviest drinkers being also the heaviest smokers. This covariance means that problem drinkers have both high blood ethanol (from drinking) and carbonmonoxyhaemoglobin (COHb) levels (due to smoke inhalation) (Williamson et al. 1987). COHb mediates some of the adverse health effects of smoking and could contribute to the pathology commonly associated with ethanol. To establish the pattern of smoking and drinking in social drinkers, we have examined the behaviour of young men in a quasi-social setting.

Five young men who were regular cigarette smokers (>20/day) and drinkers (>20 g of ethanol/day) without any medical or psychiatric abnormality were recruited. They were accommodated in a comfortable room with television set plus video recorder and videotaped movies. After a standard meal (a hamburger plus french fries), a cannula was inserted into the left ante-cubital vein and a blood sample taken (zero time). Each subject was supplied with his preferred drink(s) and brand of cigarette. One observer per subject recorded his drinks and cigarette consumption and the time of consumption. Blood samples were taken at approximately hourly intervals after zero time for the 5 hour session for determination of blood ethanol, COHb and nicotine.

Blood COHb at admission was high in all volunteers, ranging from 7.8 to 13.5 %. The subjects smoked between 10 and 24 cigarettes over the experiment so that blood COHb was either maintained at admission levels or rose. No ethanol was detected in the subjects' blood at admission and two had no detectable blood nicotine while the other three had nicotine concentrations of 12, 12 and 13 ng/ml respectively. During the experiment the subjects smoked and drank in a manner that they considered to be usual for their social drinking and, as expected, blood nicotine concentrations rose in each subject by amounts which varied with time. Ethanol consumption varied between 100 and 210 g but all subjects showed an approximately linear rise in blood ethanol with a final mean concentration of 134 mg/100 ml.

The subjects were recruited on the basis of social drinking and smoking but the admission COHb data show that the subjects were heavy smoke inhalers also. The experimental data confirm that this exposure accompanied the subjects' social drinking. It is our view that smoking should be considered as a contributor to some of the health problems that are ascribed to ethanol alone.

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