Spotlight

By Gina Kirchweger

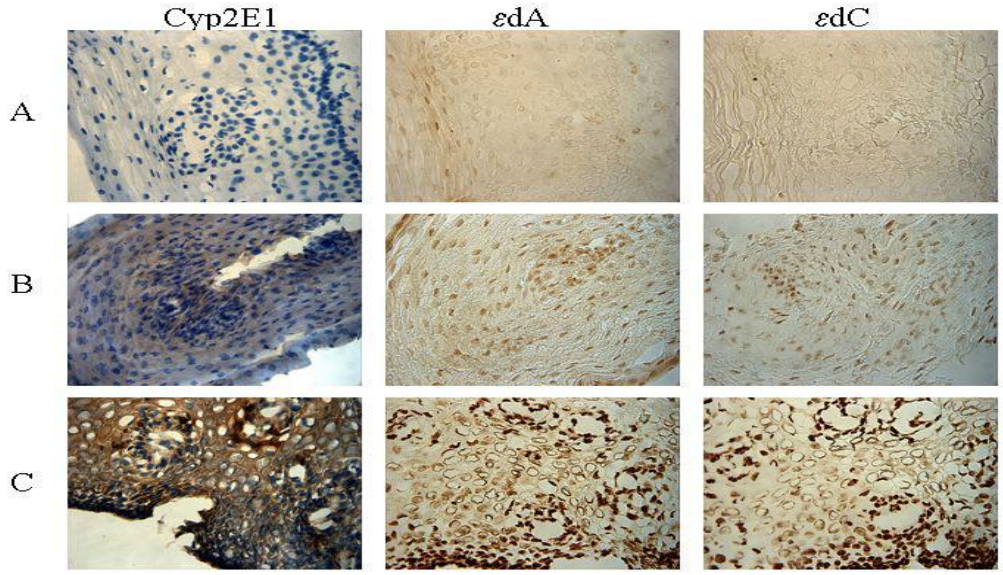
Hold the Booze

Millonig *et al*.
http://doi.wiley.com/10.1002/ijc.25604

Chronic alcohol consumption accounts for approximately 3.6 % of cancer cases worldwide. The strongest link between alcohol and cancer involves malignancies of the upper digestive tract, including the esophagus, the mouth, the pharynx, and the larynx and to a lesser degree cancer of the stomach, colon, liver and breast. The risk correlates with the level of consumption but as little as one daily drink for women and two for men may be enough to increase the risk. One drink is generally defined as 10 g alcohol, but there is some global variation in what amount of alcohol is considered a standard drink.

In the liver, the induction of cytochrome P450 2E1 (CYP2E1) and the generation of carcinogenic etheno-DNA adducts (1,N^6-ethenodeoxyadenosine,εdA, and 3,N^4-ethenodeoxycytidine, εdC) play a central role. To investigate whether the same holds true for the human esophageal mucosa, Millonig *et al*. studied non-tumorous esophageal biopsies of 37 patients with upper aerodigestive cancer and alcohol consumption of 102.3±131.4 g/day and compared them to 16 controls without a history of cancer. Not only did they find a significant correlation between the amount of alcohol consumed, CYP2E1 levels and the formation of carcinogenic exocyclic etheno-DNA adducts, but the latter also correlated with increased cell proliferation, particularly in patients who both drank and smoked.

As more information regarding the role of oxidative stress in alcohol-induced disease development becomes available, these findings could result in the development of more effective and selective new medications capable of ameliorating the tumorigenic effects of alcohol.



Alcohol consumption correlates significantly with expression of CYP2E1 and the number of nuclei positive for DNA-lesions. Row A shows esophageal biopsies of a healthy control with almost no CYP2E1 expression and no DNA lesions. Row B represents non-tumorous esophageal biopsies of a patient with oral carcinoma, a daily ethanol consumption of 112 g and 30 pack-years. Row C represents a biopsy from a patient with larynx carcinoma, a daily ethanol consumption of 260 g and 50 pack-years.