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**Antimutagenic and Antigenotoxic Effects of Beer Components  
and its Mechanisms**

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Cancer has been important cause of human mortality. It was known that about one third of all deaths from cancer may be ascribed to diet habits. To identify food and drinks which could protect against cancer is important. Antimutagenicity and anticarcinogenicity of dietary components are being studied extensively. We have been exploring whether beer, both stout-type beer and lager-type beer, could be antimutagenic, because of the wide-spread favorite use of beer in human populations.

We have investigated antimutagenicity of beer on the heterocyclic amines, 2-chloro-4-methylthiobutanoic acid, *N*-methyl-*N*'-nitro-*N*-nitrosoguanidine and benzo(a)pyrene-7,8-diol-9,10-epoxide. Beer also prevent chromosome aberrations in human lymphocytes induced by radiation, and micronucleous formation in human derived lymphoblastoid cells (WTK-1) treated with a metabolically activated form of heterocyclic amine. We have also evaluated the inhibitory potential of beer samples on the formation of DNA adduct in C57BL/6N mice fed heterocyclic amines.

Furthermore, we also evaluated the effects of beer on the metabolic activation to investigate the protective mechanisms involved.