

The Relationship Between XRCC1 Arg399Gln Polymorphism, Alcohol Consumption and Colorectal Cancer: One of the Alcohol Forbidding Reasons in Islam

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Dear Editor,

Cancers start when cells in the body begin uncontrolled growth. Cancers are one of the major reasons of morbidity and death universally, and can spread to other organs of the body. colorectal cancer (CRC) is a type of cancer that starts in the colon or rectum. It has the third rank in occurrence of cancer and mortality in the US (1, 2). It is a very serious and dangerous problem worldwide (3). On the other hand, X-Ray repair cross-complementing protein 1 (XRCC1) plays an important role in the repair of DNA damage, and this repair implementation is via base lesions excision repair (BER) pathway (4). Free radical intermediates may generate DNA base lesions that should be removed via the BER. It should be noted that the reduced repair capacity due to XRCC1 polymorphisms is a venturesome factor for body's health; Lunn et al. showed that the XRCC1 Arg399Gln polymorphism could cause defective DNA repair (5, 6). XRCC1 Arg399Gln polymorphism can result in lung cancer, leukemia, lymphoma, breast cancer and hepatocellular carcinoma (7-10). Our goal was to detect the relationship between XRCC1 Arg399Gln polymorphism and CRC and also to determine the efficacy of alcohol consumption on this relationship. Regarding the relationship between XRCC1 Arg399Gln polymorphism and CRC, some studies have shown that XRCC1 Arg399Gln polymorphism could cause CRC occurrence (11, 12). In Wu's study, it was suggested that this polymorphism has a potential to increase CRC susceptibility (13). Similarly, Chang-Jiang Qin et al. detected the association between the polymorphism of XRCC1 Arg399Gln and CRC (14). Also two meta-analyses confirmed that XRCC1 Arg399Gln polymorphism is a predisposing factor for the development of CRC (15, 16). On the other hand, researchers also evaluated the interaction between three polymorphic sites of XRCC1 gene and drinking habit; the idea was based on the role of reactive oxygen

species as relevant genotoxins that might account for the effects of alcohol; and they indicated a higher risk in people with Arg399Gln allele and alcohol drinking. Also, they suggested that chronic alcohol consumption could reduce XRCC1 protein activity (13). In addition, scholars found that the effect of high alcohol intake that increased the risk of CRC was more remarkable in carriers of the XRCC1 codons 194 Trp allele or 399 Gln allele (17-19), and as mentioned above, XRCC1 polymorphisms are repair capacity reducers, so in alcoholism, XRCC1 can't become involved in the BER of alcohol-induced DNA damage. In conclusion, CRC is seriously and significantly associated with XRCC1 Arg399Gln polymorphism. The findings demonstrate that alcoholic drinks possess adverse effects on the colon and rectum because these drinks are associated with problems linked to XRCC1 Arg399Gln polymorphism in creation and development of CRC. Also, it should be noted that according to the Holy Quran, consumption of anything that causes drunkenness is forbidden such as alcoholic drinks (20). Finally, alcoholic drinks are hazardous factors in relation to CRC and this is one of the detected alcohol forbidding reasons in Islam. So via adherence to preachments of Islam about lack of alcohol consumption, one can promote their social and personal health.

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