

Alcohol Consumption and Polymorphism of XRCC1 Gene: Two Serious Dangers for Males' Fertility

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Dear Editor,

We studied an interesting article in volume 8, number 4 (Jul 2016) of the nephro-urology monthly journal whose authors were Ahmadnia et al. (1) We admired them for their valuable and useful paper. In that article, it had been stated that chronic opioids' usage can lead to variations in sexual traits. Thus, opioids' use may cause infertility and reduce fertility rates. This matter suggests that the identification of the males' infertility dangers is necessary. Among the important factors in the field of male infertility, the relationship between alcoholic drinks' consumption and the polymorphisms of genes is a noticeable topic. One of the important topics in this regard is the investigation of the impacts of alcohol on gene X-ray repair cross-complementing 1 (XRCC1).

XRCC1 protein is a DNA damage repair enzyme that is encoded by XRCC1 gene. This repair implement is done by base lesions excision repair (BER) pathway. Alcoholic drinks can reduce the activity of XRCC1 protein; in other words, these substances have the ability to decrease the repair capacity of XRCC1 protein. As well, polymorphisms of XRCC1 gene are another serious matter in the mentioned decrease of the repair capacity (2, 3). Researchers, also, have investigated the interaction between the XRCC1 gene's polymorphic locations and drinking habit and their thought in this field has been based on the reactive oxygen species (ROS) role of the related genotoxins that may account for the alcohol efficacy. It should be noted that there is a significant risk in alcohol consumers with Arg399Gln allele (3). On the other hand, XRCC1 gene plays an important role as an essential gene in repairing the Single-strand breaks of DNA during the recombination stage in the spermatogenesis process via path BER. The expression of this gene is very high in testicular cells which states its importance in the maintenance of the spermatogenesis process correction (4). So, attention to the effects of the polymorphisms of XRCC1 and the activity reduction of XRCC1 pro-

tein on the fertility and the health of reproductive system is necessary. The results presented by the researches indicated that there is a joint effect among polymorphism of XRCC1 Arg399Gln and the exposure of polycyclic aromatic hydrocarbons on the susceptibility to sperm DNA damage, it is noteworthy that normal XRCC1 protein has a notable role in mending polycyclic aromatic hydrocarbons induced damage of the DNA molecules. So, this finding can be helpful information in the field of male infertility etiology (5). Also, researchers have investigated the association of XRCC1 gene polymorphisms and idiopathic azoospermia and they have stated that these polymorphisms can be a marker for susceptibility to idiopathic azoospermia (6). In another study, evidences were based on the XRCC1 polymorphisms contribution in developing idiopathic azoospermia risk (7). As well, Marzband et al. (8) explained that XRCC1 Arg399Gln polymorphism can be associated with the infertility of the males and Gln allele might be a risk factor for idiopathic male infertility. These results are indicative of XRCC1 polymorphisms' dangerous effects or, in other words, problems due to the reduction of XRCC1 protein activity on the males' fertility. As mentioned above, the consumption of alcohol is a very serious matter in the development or the creation of the problems linked to XRCC1 protein activity reduction; therefore, alcohol consumption can be as an agent of infertility creation in males. Finally, the lack of alcohol consumption is a desirable way to promote the reproductive health.

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