

Effect of heterocyclic amines, vegetables, and fruits on colorectal cancer

Sayed Alireza Mirsane¹, Shima Shafagh^{2,*}

¹Surgical Technology Student, School of Nursing and Midwifery, Kashan University of Medical Sciences, Kashan, I.R. IRAN

²General Surgery Specialist, Medical School, Kashan University of Medical Science, Kashan, I.R. IRAN

*Corresponding author: Shima Shafagh, General Surgery Specialist, Medical School, Kashan University of Medical Science, Kashan, I.R. IRAN; Email: mirsane.oraeei@gmail.com; Tel: +989398628850.

Dear editor

Cancer starts when cells in the body begin to grow out of control. Nearly cells can become cancer in any part of the body, and can spread to other areas of the body; Unfortunately, Cancer is one of the major causes of morbidity and death globally. Colorectal cancer (CRC) is a term for cancer that starts in either the colon or the rectum. Colorectal cancer is among the top 5 cancers most commonly diagnosed in both men and women alike (1). In the West of world, colorectal cancer is the third leading cause of cancer death in each sex and second cause in men and women combined. Colorectal cancer has 3th rank in both cancer incidence and mortality in the US (2).

A diet low in fruits and vegetables, and high in animal red meat and saturated fat, appeared associated with CRC. This is consistent with the reported CRC researches in developed countries indicating universal causal effects for this tumor type (3). And western diet is well example for this matter. Colorectal cancers is prevalent in industrialized nations ;On the other hand increasing trend of colorectal cancer occurrence has been reported in emigrants to industrialized countries also researchers explained younger women are more high-risk than others (4). These information highlight the significance of life style effects on colorectal carcinogenesis such as diet change. That diet often changes proceed to the western diet or similar. One of indexes of western diet is frying foods on a flat pan using cooking oil to lubricate the frying pan or grilling directly; On the other hand, Heterocyclic amines (HCAs) are formed when meat of muscle , such as beef, pork, fish, or poultry, are cooked using high-temperature methods (e.g., pan frying and grilling directly over an open flame) (5). Studies indicated that higher intake of total or type-specific HCA are positively associated with tumors induction

in colon and rectum and increasing of colorectal adenoma risk (6,7). Whilst. researchers was confirmed that there is no association between colorectal cancer risk and the consumption of fruit and vegetables rather high intakes of fruit and vegetables have a favourable effects on the risk of colorectal cancer (8).

So, past and present studies showed that eating vegetables and fruits can prevention from prevalence colorectal cancer, whilst high western diet intake is an important risk factor for developing colorectal cancer because these materials are containing of high HCA amount. Finally, conclusion is that colorectal cancer will develop if people are western diet willing.

Unfortunately, we've this diet in emigrants to industrialized countries or people whom are requesting this dietary model in present course that this's very serious and dangerous problem. So, perfect education has a substantial role and it's necessary.

Keywords: Colorectal, Cancer, Heterocyclic amines

Conflicts of interest

Authors declare no conflict of interests.

References

1. World Health Organization (WHO) (2015). Cancer.
2. American Cancer Society (2015) Cancer Facts and Figures 2015.: Atlanta: American Cancer Society.
3. Arafa MA, Waly MI, Jriesat S, et al. Dietary and lifestyle characteristics of colorectal cancer in Jordan: a case-control study. *Asian Pac J Cancer Prev*, (2011); 12, 1931-6.
4. Mousavi SM, Fallah M, Sundquist K, Hemminki K. Age- and time-dependent changes in cancer incidence among immigrants to Sweden: colorectal, lung, breast and prostate cancers. *Int J Cancer*. 2012 Jul 15;131(2):E122-8.
5. Cross AJ, Sinha R. Meat-related mutagens/carcinogens in the etiology of colorectal cancer. *Environmental and Molecular Mutagenesis* 2004; 44(1):44–55.
6. Cross AJ, Ferrucci LM, Risch A, et al. A large prospective study of meat consumption and colorectal cancer risk: an investigation of potential mechanisms underlying this association. *Cancer Res* 2010;70(6):2406–14.
7. Budhathoki S, Iwasaki M, Yamaji T, Sasazuki S, Takachi R, Sakamoto H and et al;Dietary heterocyclic amine intake, NAT2 genetic polymorphism, and colorectal adenoma risk: the colorectal adenoma study in Tokyo. *Cancer Epidemiol Biomarkers Prev*. 2015 Mar;24(3):613-20.
8. Turati F, Rossi M, Pelucchi C, Levi F, La Vecchia C. Fruit and vegetables and cancer risk: a review of southern European studies. *Br J Nutr*. 2015 Apr;113 Suppl 2:S102-10.