

Moderate drinking and health

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Abstract

Alcohol consumption is an important nutritional subject. There are many researches about the type of consumption which is the best for our health. People who drink moderately (1-2 drinks/day for women and 2-3 drinks/day for men) could be healthier than abstainers or heavy drinkers. The pattern of moderate drinking consists of type of drink, quantity and frequency of drinking and the status of the drinker (health profile, type of diet, other diseases, gender). Except for the pattern of moderate drinking, it is important to keep in mind the meaning of standard drinks, because they represent the serving size. The serving size of standard drink differs from country to country and it depends on grams of ethanol of each drink. According to these factors, moderate drinking benefits the health of heart and brain, but also it seems that alcohol influences the risk of obesity, the well-being and many other. Moderate drinking affects overall health through possible mechanisms, such as insulin sensitivity, levels of HDL (high density cholesterol) and LDL (low density cholesterol) and antioxidants' intake. As for now, the body of evidence has not formed the same opinion, because of the confused factors of health and the different type of researches. In conclusion, the most researches support the moderate drinking as the best drinking pattern, only if there is limit and responsibility in consumption, contributing to healthy nutrition and health.

Keywords: Alcohol, Ethanol, Silicon, Hepatic gluconeogenesis, Hyperglycaemia.

Accepted on October 25, 2018

Introduction

Almost all over the world, people are used to drink alcohol. The type of alcohol could be wine, beer, whisky, vodka or any other traditional beverage. People used to drink alcohol from ancient times at their celebrations or at their daily life.

Today, the research has focused at alcohol because it isn't clear how much alcohol is safe to drink for our health. Most researchers concluded that moderate drinking is the best drinking pattern. The International Center of alcohol policies has named 'drinking pattern' as the way of drinking, the quantity and the frequency of drinking, the type of drink, the situation of drinking and their company [1]. Now it is more established that the drinking pattern is one of the most important factors of effect of alcohol in health. The researchers have tried to categorized drinkers as abstainers, moderate and heavy. Topiwala A. et al. have defined light and moderate drinkers as 'light' drinkers who consume between 1 and <7 units of alcohol a week and 'moderate' drinkers between 7 to <14 units for women and <21 units for men a week [2].

There a lot of definitions about moderate drinking according to each organization or country. The most of them have named 'moderate drinking' as '1-2 drinks/day for women and 2-3 for men, or 10-12 grams of ethanol/day for women and 20-24 grams of ethanol/day for men [3-7].

The Brewers of Europe (2008) fleshed the definition of moderate drinking out with "To drink moderately is to drink within the limits set by your health, the society in which you live and your

obligations towards your family and friends" [3].

Focused at moderate drinking, it is necessary to know about the meaning of standard drink. Standard drink is the specific volume of alcoholic drink with specific amount of ethanol, according to Kerr and Stockwell. One standard drink ranges from 8 grams to 23,5 grams ethanol in a drink according to the type of alcohol and the serving size [8].

The World Health Organization (WHO,2014) named the standard drink according to each country [9]:

1 standard drink at USA: 14 grams pure ethanol,

1 standard drink at England: 8 grams pure ethanol,

1 standard drink at Spain and other countries: 10 grams pure ethanol.

It is important to say that the volume of standard drink depends on the type of drink, because some drinks have less ethanol than others, eg the beer has less ethanol than wine at the same serving size.

The National institute on alcohol abuse and alcoholism (2016) reported that 1 serving size of standard drink=12 ounces beer=355 ml 5%ABV or 5 ounces wine=150 ml 12,5%ABV or 1.5 ounces distilled drink (whisky, vodka, tsipouro, ouzo)=45 ml 40%ABV (Figure 1) [10].

This review is about moderate drinking and its effect in health. We searched databases, as pubmed, sciencedirect, google scholar for recent publications, using the following terms:

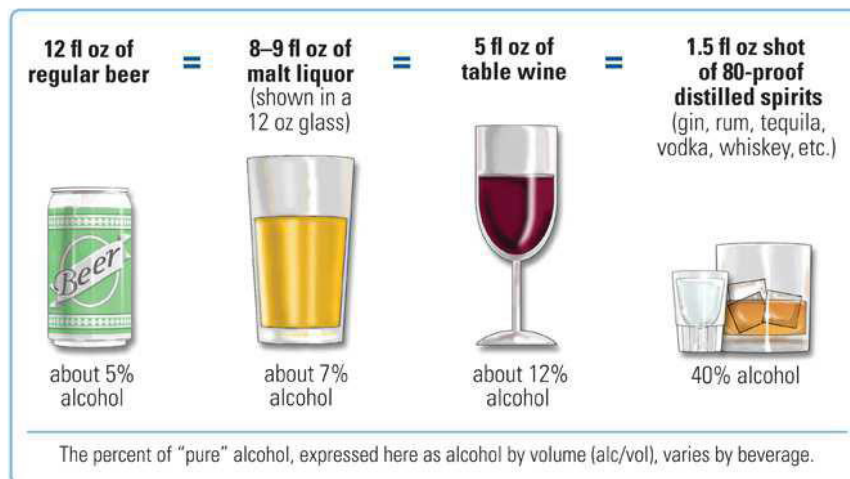


Figure 1. Alcoholic beverages as standard drinks (National Institute on Abuse and Alcoholism) [10].

'reviews', 'meta-analysis', 'moderate drinking', 'nutrition', 'cardiovascular diseases', 'pattern', 'mediterranean diet', 'health', 'standard drink'. Because of the confused definitions and outcomes, we used also guidelines of worldwide organizations, national recommendations and e-books about drinking.

Literature Review

The health benefits of alcohol continues to be only when moderate drinking exists. If the consumption is excessive, it may be linked to cirrhosis, stroke, cancers, accidents and obesity [11]. On the other hand, the guidelines doesn't suggest to start drinking if you are abstainer, because the conclusions aren't clear yet. The moderate drinking, as a drinking pattern, could benefit you, only if you are already healthy and in this case itsn't necessary to avoid [12].

We focused on diabetes, cardiovascular diseases, brain and obesity, because of the large body of evidence. The health effects of drinking are described briefly at the image 2.

Moderate drinking and diabetes

Diabetes is one of the most common diseases across the countries. In the review of Ley et al. about the role of diet, alcohol and diabetes, it seems that alcohol consumption and diabetes is associated with U-shaped fashion [13]. They observed, also, that when the alcohol consumption is in moderation, there is 30% reduction of diabetes. The mechanisms aren't clear yet, but it is supposed that alcohol may enhance insulin sensitivity and may decrease the concentration of glucose in blood [11,14]. Mathews M. et al. added one more effect of alcohol in diabetes mentioned that "Alcohol also reduces hyperglycaemia through the inhibition of hepatic gluconeogenesis, with a resulting reduction in plasma glucose levels. Reduced plasma glucose levels serve to decrease the incidence of hyperglycaemia and hyperinsulinaemia" [14].

The incontinences of the researches may be due to the different measures of fasting glucose level or different occasions of drinking. Especially in the field of the diabetes, there are other crucial circumstances, such as time of drinking, alcohol consumption with or without a meal, other diseases and gender [15,16].

In regard to the guidelines about alcohol and diabetes, the Global Diabetes Community of England recommends for people with diabetes two units for women and three units for men in each occasion of drinking. The measure of unit is equal to : one unit= $\frac{1}{2}$ pint of standard beer (approximately 0.284 ml)=25 ml distilled alcohol [17].

Moderate drinking and cardiovascular diseases

The effect of alcohol at the heart is not fully understood because the varied factors being involved. Bamforth have summarized all the effects of alcohol in heart and his conclusion is similar with more recent reviews. First of all, alcohol causes a lowering of LDL ('bad' cholesterol) in the plasma, while it increases the level of HDL ('good' cholesterol) [18,19]. Also, the alcohol effects other cardiovascular factors, such as reducing inflammation, oxidative stress, blood pressure and blood clotting [11,14,18]. Especially about alcohol and blood pressure, at the Beer and Health symposium, Hendriks stated that consumption over 30 grams of alcohol per day may increase systolic blood pressure by 1-2 mm Hg for every 10 grams alcohol over that consumption and may increase 1 mm Hg for the same additional quantity (Figure 2) [20].

The benefits in the cardiovascular diseases appears to be collaborative by alcohol and antioxidants of beverages. Alcoholic beverages, specially beer and wine, contain a lot of excellent antioxidants, such as folate acid, flavonoids, anthocyanidins, polyphenols etc. [18,21].

As a conclusion at the cardiovascular effects of alcohol, it is clear that alcohol affects the health of heart through four different biochemical pathways: elevation of HDL, lowering the concentration of LDL in blood vessels, reducing the tendency of blood clotting and lowering the levels of fibrinogen [18].

Moderate drinking and brain health

The relationship between alcohol and brain is too complicated because of the implicated factors, such as overall health, lifestyle of each person and the available evidence [22]. Until now, alcohol in moderation seems to have U-shaped relation with overall health, as the relation between alcohol and caridovascular diseases. Also, moderate alcohol could

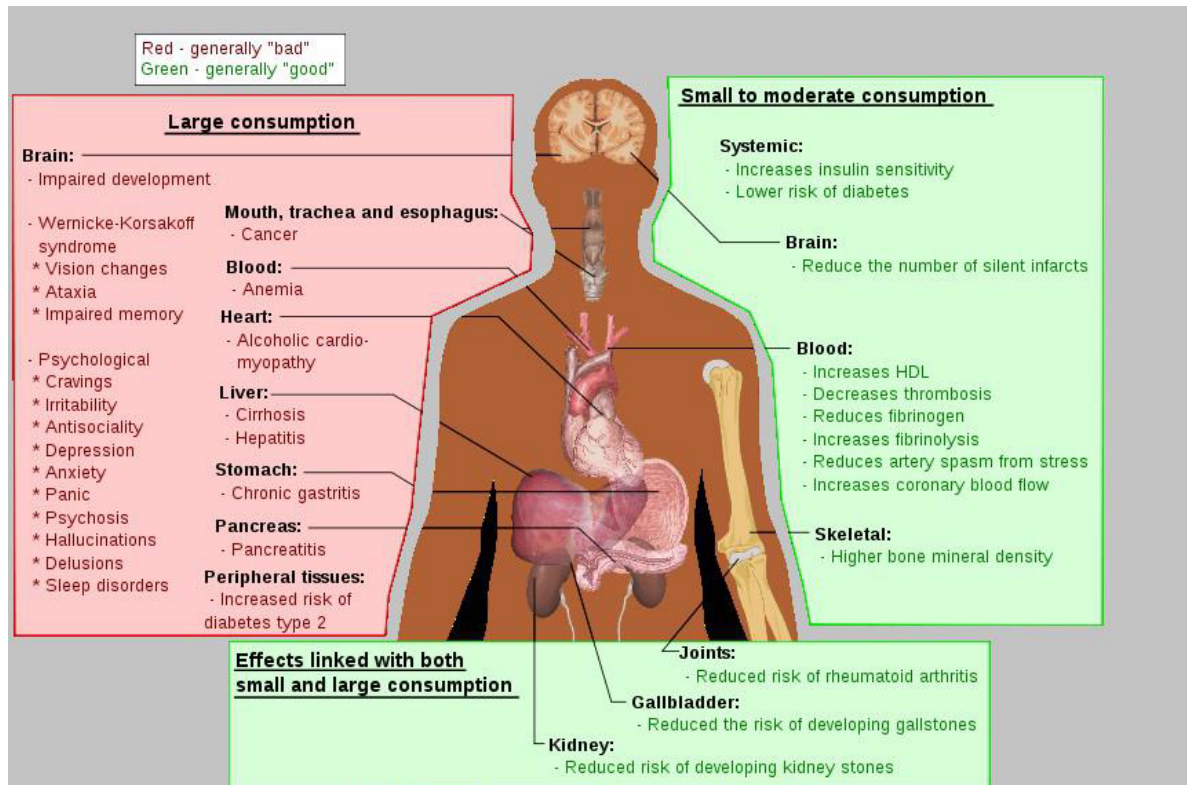


Figure 2. Effects of large vs small-to-moderate consumption [20].

improve brain health because it improves other factors, such as cholesterol, blood pressure, glucose [2]. According to Dr Kathryn O'Sullivan moderate alcohol could reduce, also, the risk for silent infarcts [23].

Moderate drink and obesity

The relation between alcohol and obesity or BMI (body mass index) is too complicated. The alcohol contains 7 kcal/gram ethanol, so alcohol could contribute at weight gain as additive source of energy [24]. But, the body of evidence conflicted. Bergmann et al. used the EPIC (European Prospective Investigation of Cancer and nutrition) study to find the relation between lifetime alcohol and adiposity. Their population was 521,448 individuals, men and women, ages 25-70 years, who were lived in 10 European countries during 1992-2000. They observed that lifetime alcohol use was positively related to greater WC (waist circumference), greater WHR (waist hip ratio) and BMI in men. In the women the only difference was the U-shaped relation to BMI. The key point, as they stated, is that: "lifetime use of alcohol in men is positively related to abdominal and general adiposity, and in women it is related to abdominal adiposity" [25].

On the other hand, the moderate alcohol doesn't cause weight gain, if the energy balance is maintained, as Dr. Kathryn O'Sullivan cited. She stated, also, that weight gain from alcohol is a consequence of excess calories, like weight gain from junk food or any over-consumption [20].

In the meta-analysis of Traversy and Chaput, it becomes clear that as of now the overall evidence supports the moderate drinking in the field of obesity. When the alcohol consumption is in moderation and the confused factors being estimated, the risk of obesity isn't possible. The confused factors could

be physical activity, studying population, type of alcoholic beverage, serving size, sleeping habits and many others [24].

One potential factor of alcohol and obesity is the type of diet of each population. Some researches showed that mediterranean diet could reduce the cardiovascular risk, especially when the diet is accompanied by moderate drinking (wine or beer) [16,21].

Moderate drinking and well-being

Nowadays, the stress level in daily life is too increased. Relaxing is a common reason for drinking and the evidence supports this reason. When you drink moderately, you can feel more relax and free. At the same time, you will keep your health in body and in soul, as the Greek association of brewers suggests [16,21].

Other health effects of moderate drinking

At the 7th European symposium for beer and health, Dr. K. O'Sullivan compiled other effects of moderate drinking. Moderate drinking seems to increase bone density, especially beer with its silicon content, reduce the risk of developing gallstones and reduce the risk of rheumatoid arthritis [21,23]. The U-shaped relation or the J-shaped relation of drinking alcohol and health is showed at the most researches. This relation is obvious at the total mortality from all causes and alcohol too [16].

Conclusion

Moderate drinking is a drinking pattern which may be beneficial at diabetes, cardiovascular diseases, brain and may be not cause weight gain. It is necessary to conduct more studies about alcohol and obesity, alcohol and overall health. Moderate drinking is 1-2 drinks/day for women and 2-3 for men, with

respect in serving sizes, standard drinks and health status. We have to keep in mind that the quantity and the drinking pattern are the most important factors of health effects of drinking.

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