

# The Benefits of Moderate Beer Consumption



Second Edition: CBMC - The Brewers of Europe 2002



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## Introduction

- This booklet summarises the current state of knowledge on the beneficial effects associated with moderate consumption of alcoholic drinks, in particular beer. It has been compiled by The Brewers of Europe to inform the general public of the clear evidence that beer, a wholesome beverage and a staple part of our diets for thousands of years, is not only good to drink but may also be good for health when consumed moderately.
- The information is not intended to encourage people to consume beer, or other drinks, for their health benefits. The intention is to inform and reassure those who enjoy drinking beer that, when consumed moderately, it is not a health risk and there may be a net benefit.
- The first edition of this booklet was inspired by a one-day seminar on the health benefits of moderate alcohol consumption and the healthful properties of beer held in November 1999 which included presentations from many European experts.
- The second edition follows a further symposium held in October 2001 to examine the latest scientific evidence on this subject. Speakers included Professor Antonio Gasbarrini; Catholic University, Rome, Italy; Dr Pilar Cordero Franch, University of Valencia, Spain; Professor Dr Denis de Keukeleire, Ghent University, Belgium; Dr Norbert Frank, German Cancer Research Centre, Heidelberg, Germany; Dr Caroline Walker, Brewing Research International, Nutfield, UK; Dr Jonathan Powell, St Thomas' Hospital, London, UK; Professor Mack Mitchell Jr., Alcoholic Beverage Medical Research Foundation, Baltimore, USA; and Dr Eric Skovenborg, General Practitioner, Denmark. Their presentations are the main reasons for The Brewers of Europe being inspired to revise this edition.
- At the first Beer and Health Symposium the Chairman concluded that beer played a part, along with other alcoholic drinks, in reducing the risk of heart disease and that there was also preliminary evidence of benefits of beer consumption, which may be different from those of other drinks, which warranted more detailed investigation.
- Since then research has progressed and some exciting new results and ideas about the health benefits of beer consumption have now been published. This edition summarises the current state of knowledge.

## Moderation and responsibility are the key words



**"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"**

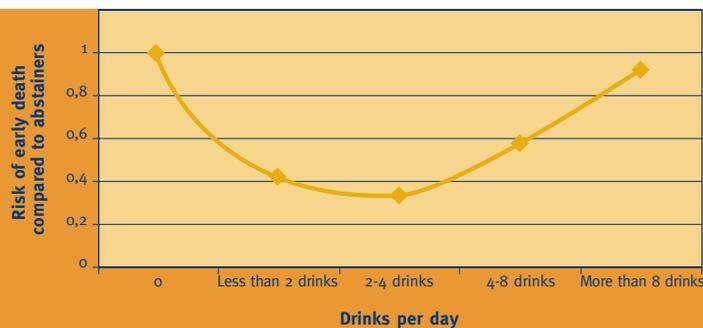
- This booklet concentrates on the effects of responsible consumption of beer. It must be stressed that the beneficial effects reported apply **only** to moderate consumption by adults. Heavy drinking, whether in binges or regularly, can be harmful and is associated with many chronic health problems.
- Dr Skovenborg, speaking at the symposium, defined moderation in the following terms. "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: 1 – 3 drinks a day for most men".
- "Women are more sensitive to alcohol so they are advised to drink less than men: 1 to 2 drinks a day."
- The amount of alcohol in "a drink" of beer can vary considerably depending on the size of the glass and the alcoholic strength and will differ slightly across Europe according to historic traditions and customs\*.
- While these are useful guidelines it must be remembered that they only apply to healthy adults and there are some situations where even moderate drinking is too much. Examples of situations where it may not be appropriate to drink at all include during pregnancy, before driving or operating machinery or when taking certain medication.
- The industry is mindful of the dangers of abusive drinking. To this end it has produced numerous educational programmes and campaigns to avoid misuse such as those to prevent drink-driving and underage drinking.

\* For the definition above, and all references to glasses of beer / drinks in this booklet, a glass would be 0.25litre (approximately half a pint of beer in the UK or Ireland) with a strength between 4 and 5%abv. This would have an alcohol content of about 10g.

## Moderate consumption of alcoholic drinks can be good for your heart

- There is strong evidence that people who are moderate drinkers of beers, wines and spirits have a substantially reduced risk of coronary heart disease, heart attack, when compared to teetotalers and heavy drinkers. This has been shown in many studies throughout the world. There is also evidence that light to moderate drinking may be protective against other cardiovascular diseases including the most common form of stroke<sup>1</sup>.
- It is estimated that an intake of approximately 3 alcoholic drinks a day should reduce the risk of coronary heart disease by 24.7%<sup>2</sup>. The benefit applies to a broad range of individuals including those considered to be of higher risk of cardiovascular disease<sup>3</sup>.
- The "U shaped curve" (shown below) illustrates the effect that this reduction in the risk of coronary heart disease has on the risk of deaths from all causes. At moderate levels of consumption the risk of early death is reduced relative to the risk in abstainers. Heavier drinkers show risk levels equal to or greater than those of abstainers.
- There are several well established explanations for this observed reduction in risk. The one which has been shown to be responsible for the majority of the effect, is that the amount of 'good fat', (HDL cholesterol) in the blood increases when alcohol is consumed, which decreases the risk of cardiovascular disease. Research has shown that one glass of beer a day can increase HDL cholesterol levels by 4%<sup>5</sup>.
- Another explanation is that alcohol has a blood thinning effect and reduces the tendency of blood to form clots<sup>2</sup>.
- Light to moderate alcohol intake has also been shown to be associated with a slight decrease in cardiovascular, and total, mortality in people who have already had a heart attack<sup>6</sup> or have Diabetes<sup>7</sup>.

Consumption of alcoholic drinks and risk of early death



Source: "The relation of alcohol intake to coronary heart disease and all-cause mortality in a beer drinking population"<sup>4</sup>.

## Beer is just as good at protecting the heart as wine

**It is the alcohol that is having the protective effect and no individual type of drink can claim the monopoly**

- There have been many studies, which have attempted to show that either beer, or wine, or spirits has the most protective effect against cardiovascular disease. But when the evidence is examined, there is no clear "winner" because the major protective agent is alcohol<sup>8</sup>. The American Heart Association has advised that "There is no clear evidence that wine is more beneficial than other forms of alcoholic drink."<sup>9</sup>.
- The same beneficial effect is seen in many different countries with different cultures and drinking habits and this confirms that it is the alcohol that is having the protective effect and no individual type of drink can claim the monopoly<sup>10</sup> in relation to cardiovascular disease.
- For example, in Germany, where beer is the favourite drink, research has confirmed the beneficial effect of alcoholic drinks<sup>11</sup>. Professor Hoffmeister has calculated that if European beer drinkers stopped drinking there would be an increase in cardiovascular disease, a decrease in life expectancy of about 2 years and a decrease in general happiness!
- Further confirmation that the heart protection comes from the alcohol was provided by some research in the Czech Republic which only analysed beer drinkers and non drinkers<sup>12</sup>. The lowest risk of heart attack was found in men who drank 2 – 4 glasses daily. (Between 4 and 9 litres per week).



**There is strong evidence that moderate drinkers have a substantially reduced risk of heart attack**

## The effect of lifestyle

When other factors such as lifestyle are taken into account moderate alcohol consumption alone has been shown to give a 17% reduction in risk of cardiovascular disease

- There are many other factors, apart from what people drink, that influence their health. These factors include such issues as diet, social status, lifestyle, health behaviour and pre-existing disease. It is therefore vital that these factors are taken into account in any research into the effects of alcohol on health. A series of publications from Denmark suggested that wine conferred more health benefits than beer but it is now recognised that lifestyle differences may not have been taken fully into account in this work<sup>13</sup>.
- Lifestyle and other factors which can affect the results are called "confounders" and failure to take proper account of these was a weakness of many studies before their effect was understood. All confounders have to be considered to obtain a measure of the protective effect of alcohol alone. When confounding has been taken into account, moderate alcohol consumption alone has been shown to give a 17% reduction in risk of cardiovascular disease which puts it on a par with the use of aspirin, weight control, antioxidants and exercise as preventive measures.
- Another consideration is not just 'how much' but 'the manner in which' people are drinking. The latest surveys show that people who occasionally 'binge' (drink over 5-6 drinks in a session) do not show the same degree of protection from coronary heart disease even when their consumption over a week is moderate<sup>14</sup>. "Plausible explanations for this include several considerations, for instance the opposite effects of a binge compared with regular moderate alcohol consumption on blood clotting and 'good fat', (HDL cholesterol), formation."
- It is also clear that drinking alcoholic drinks with a meal is better than drinking on an empty stomach.



## Other beneficial effects from moderate consumption of alcoholic drinks

Research evidence is also building up to show that regular moderate consumption of alcoholic drinks may be protective against many other conditions

- Research evidence is also building up to show that regular light or moderate consumption of alcoholic drinks may be protective against many other conditions.
- Several studies have confirmed the finding of a lower incidence of late onset Diabetes (type 2 Diabetes Mellitus) in moderate drinkers in both men<sup>15</sup> and women<sup>16</sup>. The risk has been shown to be 36% lower in men who consumed one or two drinks per day compared to non drinkers<sup>17</sup>. While the mechanism remains uncertain, moderate alcohol intake may improve sensitivity to insulin which in turn reduces demand on the pancreas. Lower insulin levels may also be beneficial in reducing risks of cardiovascular disease.
- Several studies have shown an association between moderate alcohol consumption and a decreased risk of developing gallstones<sup>18</sup>. This is shown with consumption of all types of alcoholic beverages and the risk is lowest in those who consume frequently. There are several plausible explanations for this finding which include the effect of alcoholic drinks on cholesterol levels and reduced bile concentration.
- Recent research also indicates that moderate consumption of alcoholic drinks has a protective effect on bones which can reduce the risk of osteoporosis (weakening of the bones)<sup>19</sup>, may protect against thyroid problems such as goitre<sup>20</sup> and can be associated with a lower risk of developing Parkinson's disease<sup>21</sup>. The reasons for these beneficial effects are not yet clearly understood and more research is needed to explain the mechanisms.
- Some recent studies have indicated that moderate consumption may reduce the risk of developing senile dementia<sup>22</sup>. Although this has been the subject of several papers recently there is no consensus on how alcohol is having this effect<sup>23</sup>.
- Positive psychological benefits associated with moderate intake of alcoholic drinks are acknowledged by many experts but are more difficult to demonstrate scientifically. A recent review of the literature confirmed earlier findings that alcohol in moderate amounts is effective in reducing stress and tension and increasing feelings of well being<sup>24</sup>. The review found that, "to a greater degree than either abstainers or heavy drinkers, moderate drinkers have been found to experience a variety of psychological benefits". More research is needed to explain mechanisms to account for the improved functioning and the part, if any, played by the social setting.
- Research in Spain has confirmed the results of Scandinavian studies which show that people who drink moderately believe they are more healthy<sup>25</sup>. This results in them feeling better about and having more positive attitudes to their health.

## Beer can make a positive contribution to a healthy diet!

- The Brewers of Europe are proud of the range and quality of their beers which include ales, stouts, lagers, wheat beers, fruit beers etc..
- Beer is made from wholesome ingredients, malted barley, hops, yeast and water. All these are natural materials which contribute to a healthy, balanced diet<sup>26</sup>.
- Beer is 93% water and is a thirst quenching long drink which is relatively low in alcohol.
- Moderate consumption of beer can provide essential vitamins and minerals<sup>27</sup>. It is high in potassium and low in sodium – the right balance for healthy (low) blood pressure<sup>28</sup>.
- Like bread, which is also made from cereal, beer is an excellent source of vitamins which are essential for life. Indeed the malting (or sprouting) process actually increases the nutritional value of the cereals used to make beer. In particular beer is rich in the B type vitamins for example niacin, riboflavin (B2), pyridoxine (B6) and folate (B9). (The table on page 13 shows the percentage of the recommended daily intake of certain vitamins and minerals found in a litre of beer).
- It is low in calcium and is rich in magnesium which may help to protect against gall stones and kidney stone formation. This may be one reason why daily consumption of a glass of beer has been shown to reduce the risk of kidney stones by 40%<sup>29</sup>.
- People who drink beer moderately are protected from the bacterium *Helicobacter pylori*<sup>30</sup> which is known to cause the majority of stomach ulcers and may be a risk factor for stomach cancer.
- Beer is also a source of soluble fibre which is derived from the cell walls of barley<sup>31</sup>. Half a litre of beer contains an average of 10% of the recommended daily intake of soluble fibre and some beers can provide up to 30%. Other than keeping you regular, this has a further benefit by slowing down the digestion and absorption of food and reducing cholesterol levels which may help to reduce the risk of heart disease<sup>32</sup>.

Beer can provide essential vitamins and minerals and can contribute to a healthy balanced diet



## Some vitamins and minerals in beer

Vitamin	% of recommended daily intake per litre of beer*	Average contents per litre of beer*
B12	>100	1.7 micrograms
B2 Riboflavin	17	0.3 mg
B6 Pyridoxine	17	0.3 mg
Biotin	17	5.0 micrograms
Niacin	13	3.0 mg
B9 Folate	10 - 45	40 - 120 micrograms
Pantothenic Acid	8	1.0 mg

\* Amount in an average (typical) beer

Mineral	% daily intake per litre of beer*	Average contents per litre of beer*
Magnesium	25	100mg
Potassium	25	400mg

Source: "The composition of Foods"<sup>33</sup>.



## Potential benefit from the natural ingredients in beer

### Vitamins and antioxidants could also be protective

- Scientists who have studied the reduced risk of coronary heart disease in beer drinkers report that the reduction in risk is greater than would be expected from the alcohol alone and speculate that other factors in beer such as vitamins and antioxidants could also be protective<sup>34</sup>.
- Research is also being conducted into the properties of alcohol-free beer. The results so far indicate that the potential beneficial effects from the natural ingredients are likely to apply equally to this type of beer<sup>35</sup>.

### • Antioxidants

#### Beer contains natural antioxidants which may have a positive health effect

- Natural antioxidants are found in fruits, vegetables and cereals. They are present in beer, where they come from both the malt (barley) and hops as ingredients<sup>36</sup>. The total amount of antioxidants in beer will depend on the style of beer and therefore the raw materials and the brewing process used.
- Per drink (of equivalent alcohol content), beer contains more than twice as many antioxidants as white wine, although only half the amount in red wine<sup>37</sup>. However, many of the antioxidants in red wine are large molecules and may be less readily absorbed by the body than the smaller molecules found in beer. Research has shown that the antioxidant content of blood is raised following beer consumption suggesting that the antioxidants in beer are readily absorbed<sup>38</sup> and perhaps more readily than that from solid foods<sup>39</sup>.
- The health significance of antioxidants is that they may play a role in the protection against cancer through their action against free radicals<sup>40</sup>. They are also thought to reduce the risk of heart attacks by inhibiting blood clotting<sup>41</sup>. Thus the anti-oxidants in beer may have a positive health effect on the consumer.



### • Vitamins and minerals

#### Beer provides a rich source of dietary folate and silicon



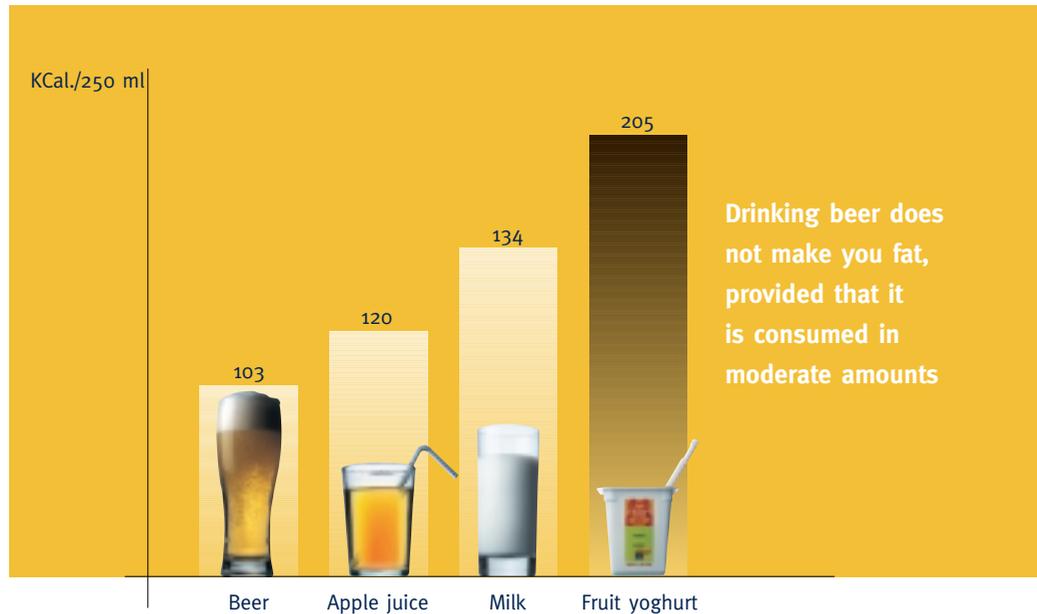
- As well as adding to a healthy diet, the vitamins and minerals in beer may confer additional health benefits.
- Recent research suggests that the B vitamins (B6 and B9) may give beer drinkers additional protection against cardiovascular disease compared to drinkers of wine or spirits<sup>42-43</sup>. For example vitamin B9 may help to reduce the levels of homocysteine in the blood. High homocysteine levels, like "bad cholesterol" (LDL), are associated with a higher risk of heart attacks. Research in a predominantly beer drinking population in Wales concluded that drinking beer, in contrast to other alcoholic drinks, may moderate homocysteine levels as a result of its high folate content<sup>44</sup>. Another study in the beer drinking population of the Czech Republic found that consumption of one litre of beer a day was associated with lower blood homocysteine levels<sup>45</sup>. Clinical research is underway to examine whether the folate in beer can reduce homocysteine levels.
- It has been suggested that adequate dietary folate (B9) could protect against some cancers by protecting the DNA from the type of damage that can cause cancer<sup>46</sup>.
- Beer is also an excellent source of dietary silicon which is readily absorbed by the body. This silicon comes from the barley and is released during the brewing process<sup>47</sup>. Silicon is associated with healthy bones and has been shown in laboratory (animal) experiments to increase bone mineral density when taken orally<sup>48</sup>. Research is underway which will investigate whether the dietary silicon provided by moderate beer consumption actually protects against osteoporosis. This may explain in part the protective effect on bones reported for alcoholic drinks in general (see page 11 above).

### • Hops

#### Possible health benefits - unique to beer

- Small quantities of the flowers from hops are used to preserve and flavour beer.
- Hops are not used in other alcoholic drinks so any potential health benefits they have are unique to beer.
- Many studies have shown that the flavonoids in hops, have the potential to protect against some diseases and help fight some types of cancer<sup>49</sup>. Most of this research has been done in the laboratory but additional research is planned to investigate the potential effects in animals and people.
- Hop flavonoids can be shown to be present in beer<sup>50</sup> but as yet their effect on human health is not fully understood.

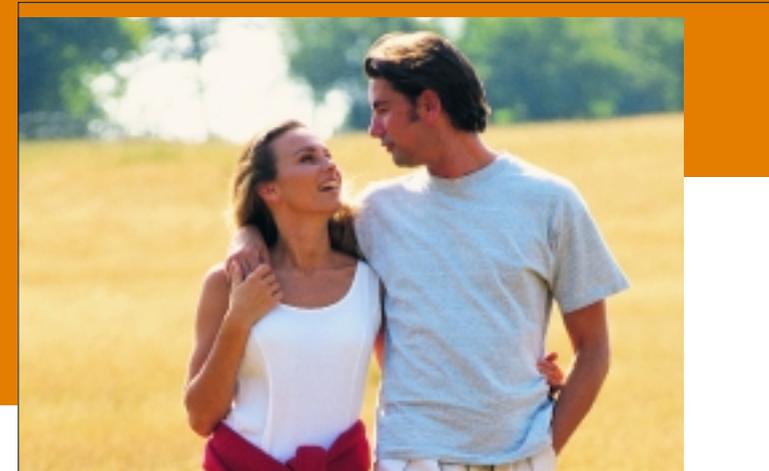
## Drinking beer in moderation does not make you fat



- Beer does not contain fat or cholesterol and is low in free sugars. The calories in beer come largely from the alcohol content.
- The term "beer belly" is associated with obesity in beer drinkers in several parts of Europe. This may not be due to the beer but to a confounder. In other words, some beer drinkers may have a less healthy lifestyle.
- It has been shown that generally teetotallers have a tendency to be fatter than people who drink alcoholic drinks<sup>51</sup>.
- Several studies have observed that when moderate drinkers are compared to non-drinkers females have a lower average weight and males similar average weight. This is found despite the fact that their calorie intake is greater (calories from diet and alcoholic drink). Why this should be the case is still a matter of debate<sup>52</sup>.
- Research also points to less efficient utilisation of the energy contained in alcoholic drinks<sup>53</sup>.
- Beer provides calories in similar quantities to soft drinks<sup>54</sup>.
- Drinking beer does not make you fat, provided that is part of a balanced diet and consumed in moderation with meals<sup>55</sup>.

## And finally...

The information given is not meant to encourage consumption of beer or other drinks as a means of promoting health or longer life



- The research described in this leaflet sums up the current state of knowledge on this subject. More studies are underway to examine whether some of the potentially beneficial components of foods and beverages such as beer, can be used by the body for the prevention of disease.
- The information is not meant to encourage consumption of beer or other drinks as a means of promoting health or longer life. Beer is consumed for refreshment, enjoyment and convivial company. However, it should be comforting to those who do consume beer regularly that, providing consumption is moderate and part of a balanced diet, it is not a health risk and there may be a net benefit.
- The medical profession is reluctant to advocate moderate drinking to gain the associated health benefits because of an understandable fear that this might lead to over indulgence or be interpreted as an excuse for some people to drink too much. On an individual basis general practitioners will be able to assess their patients risk more precisely.
- More public information about what Government's and the medical profession consider as moderate (healthy) consumption levels would be welcomed by the industry.

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