



## **Effect of some food type on blood pressure**

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### **Abstract**

Blood pressure is the force that blood puts on the walls of blood vessels. High blood pressure refers to the rate of pressure on the walls of the arteries, and hypertension is sometimes called a silent killer, because it does not cause any symptoms, as anyone can develop it without noticing, and among the most common risks are the factors that lead to high pressure are factors outside On control such as: age, family history, gender, and race, over time high pressure can lead to vascular disease, which contributes to heart and kidney disease, stroke and other problems while there are controllable factors such as: exercise, diet that plays an important role in controlling blood pressure, and through this article we will learn about the most important foods that contribute to regulating blood pressure.

### **Blood pressure:**

Blood pressure is linearly related to mortality from coronary heart disease[1,2] and a 5mmHg increase in usual diastolic blood pressure has been estimated to increase stroke and coronary heart disease risk by 34% and 21% respectively[3]. The main diet-related determinants of hypertension are obesity, high intakes of alcohol and sodium, and a low potassium intake [4,5]. Limiting dietary sodium and use of the Dietary Approaches to Stop Hypertension (DASH) diet have been shown to be effective in reducing blood pressure in both normotensive and hypertensive individuals [6]. The DASH diet is rich in vegetables, fruits and low-fat dairy foods, and several studies have found that vegetarians, who might be expected to have a diet similar to this, have lower blood pressure than non-vegetarians[7–10] .

World Health Organization ,2013reference that there are many factors that cause high blood pressure, including behavioral risk factors such as eating foods that contain a lot of salt and fat and not eating enough fruits and vegetables and Smoking tobacco and alcohol in a harmful way, physical inactivity, lack of exercise and mismanagement of stress, in addition to social and economic factors such as monthly getting a job or work, and it is likely that the income, housing, and fear of not being random and rapid urban expansion increases the chance of developing high blood pressure due to unhealthy environments that encourage the consumption of fast foods and behavior free of activity. Finally, the risk of developing high blood pressure increases with age due to vascular stiffness, despite the possibility of slowing the aging of blood vessels through a healthy lifestyle that includes eating healthy foods and reducing salt intake in the diet[11].

### **The importance of monitoring blood pressure**

The importance of follow-up lies in avoiding complications resulting from any defect, whether by increasing or a decrease in the measurement of blood pressure, as when it rises, it means that the heart faces great resistance to pumping blood into the arteries of the body causing it to long term heart failure, which in turn leads to death[12]. Also that high blood pressure may also lead to stroke or kidney failure, this is if the disease is not corrected at its beginning with the appropriate medical drugs. Also, low blood pressure suggests that the amount of blood delivered to organs the body is not getting enough or fast enough, which means less access oxygen and food to the tissues of the body, which is harmful to them, causing partial or complete destruction eat, especially the brain, which is the first organ affected to cause human feeling attacks of fatigue and general weakness may be followed by a person's loss of consciousness. As generally low blood pressure is considered "satisfactory" if it has symptoms like this dizziness and persistent general weakness[13,14]. People with high blood pressure are advised to focus on low-sodium foods that help lower blood pressure[15]. There are many things that can be done to fight high blood pressure, and this does not include medicines only, but also includes certain foods that help greatly in cases of high blood pressure, we will get to know them in this present review.

### **Healthy nutrition to improve blood pressure**

Nutrition-based approaches are recommended as first-line therapy for the prevention of hypertension in individuals with high normal blood pressure (BP) and to control BP in patients with Stage 1 hypertension. To date, most recommendations for lifestyle modifications have focused on reducing salt intake, weight loss, and moderation of alcohol consumption. Other dietary interventions, particularly modifying whole dietary patterns, might also effectively reduce BP and thereby control hypertension. To control high blood pressure in infected people, In the first stage of high blood pressure, you should stick to a diet that focuses on fruits and vegetables, Low-fat dairy products, complete, Grains, poultry, fish, nuts, and fats are reduced it resulted in red meat, sweets and drinks that contain sugar that lead to

weight gain and then high blood pressure, and thus cardiovascular diseases[16]. Results of Ndanuko *et al.* (2016) indicated that healthy dietary patterns such as dietary approaches to stopping high blood pressure, the Scandinavian diet, and the Mediterranean diet Significantly reduced systolic and diastolic blood pressure by 4.26 mm Hg and 2.38 mm Hg, respectively. These meals are rich in whole fruits and vegetables ,grains, legumes, seeds, nuts, fish, dairy products, lean meat, sweets, and alcohol. Lifestyle factors such as exercise and weight loss together with dietary changes it may also reduce BP[17].

### **Benefits of vegetables and fruits for high blood pressure patients**



Vegetables contributes to lowering blood pressure because it contains large quantities of potassium, calcium and magnesium which helps the kidneys get rid of their sodium content through urine, that such as lettuce, watercress, kale, spinach, beet leaves, green turnip ,tomato and celery. There are many other non-leafy vegetables that contribute to lowering blood pressure, such as red beets are a type of vegetable rich in nitric oxide, which helps open and expand blood vessels and lower blood pressure and some preliminary research indicates the ability of garlic to reduce high blood pressure due to the fact that it raises nitric levels in the body when ingested and lowers cholesterol in the blood. While onions contain sulfur that lowers high blood pressure, so it is recommended to take it in cases of high blood pressure.

Ginger, which prevents calcium deposition in the blood vessels and tissues of the body, which reduces blood pressure, as well as basil, which contains eugenol, which limits calcium channels and lowers blood pressure, which prevents cardiovascular disease.

A group of studies have proven that the fruits of apples, blueberries and bananas have a very positive effect on blood pressure readings, as apples lower blood pressure because it is an important source of quercetin, a substance that belongs to flavonoids (organic compounds that have an anti-oxidant and anti-free radical effect). Blue berries have a high level of flavonoids and strong antioxidant properties and this helps to lower blood pressure. Also, blueberries possess large amounts of anthocyanins belonging to the group of flavonoids, and those who obtain high levels of this substance have high blood pressure by 8%.

Researchers believe that anthocyanins reduce high blood pressure by enhancing nitric oxide, It is a chemical in the arterial walls that keeps the blood vessels relaxed and dilated. As for bananas, it is another healthy option from fruits to reduce high blood pressure as it is rich in potassium, as studies have shown that consuming two bananas per day can help reduce blood pressure by 10%. Citrus fruits, such as oranges, grapefruit, tangerines and lemons (sour), provide citrus fruits with the amounts of potassium, vitamins and fibers that improve excreta disposal. The berries and strawberries are rich in potassium and antioxidants. Papaya is rich in magnesium and potassium and also has strong antioxidants (flavonoids), which helps lower high blood pressure[18,19].

Lemon is one of the most important elements for preventing high blood pressure, and it has a great role in preventing and strengthening arteriosclerosis, and it treats weak capillaries and bleeding of blood vessels; Because it contains a large percentage of ascorbic acid, vitamin C, organic salts and acids that contribute to the burning of salts and nitric oxide, and it contains potassium which maintains blood pressure by balancing the fluid level in the body, and solves the problem of high blood pressure by reducing it from consuming vitamin C. However there is evidence Lacking the acute effects of lemon juice on high blood pressure Patients and its effect on heart rate[20].

### **The role of olive oil in low blood pressure**

Olive Oil is one of the foods that regulates and lowers blood pressure. Many experiments conducted on a group of people in the mediterranean region have proven that olive oil has a role in protecting them from arterial vessels, because it protects against high blood sugar levels, And high cholesterol and harmful fats in the blood because it contains polyphenols[21]. A published mary and selina(2015) study indicates that daily use of at least two tablespoons of EVOO can Low blood pressure compared to oils rich in polyunsaturated fats or refined olive oil. EVOO with Higher total phenolic content may be more effective than EVOO with lower phenolic content in reduction Blood pressure. But it is not clear why EVOO with the highest total phenolic content has different effects on systolic and diastolic blood pressure and specific the phenols and their quantities vary greatly depending on the variety of olives and the conditions for growing and harvesting[22]. Future research should seek to verify the level of total phenols needed to improve blood pressure and identify specific phenols that have a greater effect on blood pressure.

## Relations of Chicken, Red meat and fish and blood pressure



In fact, eating red, lean meat and cooked in a healthy manner, that is, steamed or boiled or other healthy cooking methods does not have a negative effect on the blood pressure, but when the meat is eaten fried or when the meat is rich in fat, it contributes to Increasing the harmful cholesterol level in the body and thus increase the high blood pressure. Red meat consists mainly of protein and fat. The protein in goat meat is well balanced with essential and non-essential amino acids and contains high levels of taurine, carnitine and inosine that are important to human health [23]. Meat fats contain approximately 50% of saturated fatty acids and 50% of unsaturated fatty acids with high levels of oleic acid (C18: 1) .Therefore it is believed that the high blood pressure observed in people who eat meat dishes is due to the spices used in the flavor of the dishes rather than the meat itself [23].

Sunagawa *et. al.* ( 2014) indicated prolonged consumption of chicken and meat does not cause an increase in blood pressure, but rather the large amount of salt used in preparing goat meat dishes is responsible for increasing blood pressure. Also, the many calories contained in fried fatty meats lead to weight gain, which in turn causes an increase in blood pressure [24]. A recent study indicated that eating grilled meat by direct flame is also one of the reasons that lead to high blood pressure, because the chemicals that the flame releases and the barbecue process lead to oxidative stress and insulin resistance by the body, and these factors can also stand behind the high blood pressure.

Appleby and others (2002) verify that the elimination system has a fundamental role in regulating blood pressure, which included the study of four groups of meat eaters, fish eaters, vegetarians and vegans). The result was Non-meat eaters, especially vegans, have a lower prevalence of hypertension and lower systolic and diastolic blood pressures than meat eaters, largely because of differences in body mass index [25].

## The beneficial effect of milk products on blood pressure



Milk contains the major nutrients responsible for controlling blood pressure, such as calcium, magnesium, and potassium, that help regulate blood pressure, but it is difficult to isolate their individual contributions as they are often found in foods rich in calcium[27]. Perhaps the most important factor relates to bioactive peptides derived from dairy products, including cheese.

Both casein and whey protein contain specific bioactive peptides that have been shown to have an angiotensin-1-converting enzyme (ACE) inhibitory effect, a key process in BP control. Other studies have demonstrated that certain milk-derived peptide combinations also have hypotensive effects via the modulation of endothelin-1 release by endothelial cells[27]. With respect to cheese, casein-derived bioactive peptides are more relevant; for example, isoleucine-proline-proline (Ile-Pro-Pro) and valine-proline-proline (Val-Pro-Pro) have been shown to exert antihypertensive activity[28]. A recent meta-analysis (comprising nine studies with a total of 623 participants) of these specific tripeptides on BP control confirmed their hypotensive effects in prehypertensive and hypertensive individuals. Significant decreases of 4.8 mm Hg in systolic BP and 2.2 mmHg in diastolic BP were found after the pooling of these trials. When trials were separated by BP status, hypotensive effects appeared to be greater in hypertensive vs. prehypertensive subjects. As a trend, the hypotensive effects became more obvious as the intervention lengthened [29]. In addition, milk and its derivatives containing probiotics to reduce the rates of systolic blood pressure by 3.56 mmHg, and diastolic by 2.38 mmHg. It also contains potassium, which expels and absorbs sodium from the body; Therefore, eating milk in the long run reduces stress.

## High blood pressure patients should avoid salt and fast salty food



Eating large quantities of salt is a major risk factor for a lot of high blood pressure Cardiovascular and kidney diseases. Global work on Salt and health. Salt consumption should be reduced With the aim of reducing blood pressure[30]. In many epidemiological, clinical, and experimental studies, it has been proven that eating salt or sodium in food causes high blood pressure, and low food salt intake works to lower blood pressure. Depending on the basal blood Pressure and degree of salt intake, systolic blood pressure can be reduced by 4 to 8 mm Hg [31].Manzoor *et.al.*,(2015) explained that the effect of lowering blood pressure for a low-sodium diet. It may have important public health implications, after I conducted four trials with individuals with blood pressure (n = 2326) and six trials with high blood pressure (n = 387), with follow-up from 28 days to 1095 days. Systolic and diastolic blood pressure was reduced at 1 to 39 most common in those with a low-salt diet compared to usual mm Hg, to -10.9 mm Hg), as salt (systolic by 1.7 mmHg to 12.6 mmHg, diastolic by well as sodium excretion in the urine 24 hours (42 mmol daily, to 78 mmol daily) [32].

Decreased sodium intake was associated with a change in blood pressure. A greater decrease in blood pressure is achieved when low salt intake is combined with other lifestyle interventions, such as adherence to dietary approaches to stop high blood pressure. The salts not only affect blood pressure but also the risk of stroke and left ventricular hypertrophy [31]. Also for unsalted seeds and nuts have a high content with many of the elements magnesium, potassiumthat contribute to reducing pressure; Examples include sunflower, zucchini , pumpkin seeds and almonds.

## The effect of coffee and tea on blood pressure



Coffee contains caffeine, which is one of the stimulants. Therefore, drinking coffee can be associated with high blood pressure, as stimuli increase the activity of the central nervous system, and thus it increases the feeling of alertness and concentration, and this can lead to contraction of blood vessels, which can It causes an



increase in blood pressure and may affect the supply of blood to the heart. In some of the epidemiologic studies blood pressure measurements were taken under conditions when fasting was required from the participants [33,34,35]. This may have led to an underestimation of the blood pressure levels in the studies with negative results, because caffeine deprivation has been associated with lower blood pressure in habitual consumers [36,37]. Thus, the inverse association between coffee intake and blood pressure observed in some epidemiologic studies with the lower blood pressure in regular users of coffee.

Salvaggio et al, (1990); Gyntelberg et al, (1995) is during caffeine withdrawal consistent Black and green tea reduced the risk of coronary heart disease and stroke by 10% and 20%, respectively. In the absence of definitive scientific data, it would seem prudent to recommend moderation when it comes to the ingestion of caffeine containing beverages such as coffee, tea and cola drinks[33,35]. There is little evidence to suggest that habitual consumption at the current average of the equivalent of 2 to 4 cups of coffee per day causes an increase in blood pressure of any clinical importance. Ingesting larger amounts (e.g. from 5 to 6 cups of coffee per day) should be discouraged if increases in blood pressure are a concern, such as in patients with hypertension or in those individuals having a prehypertensive state[38].

Some people may ask about the ability of tea and coffee to protect against heart disease, mostly due to the presence of a phytochemical component that affects the lining of the blood vessels, which causes the walls of the vessels to relax. Tea also affects blood vessels and causes them to expand, and consequently increases blood flow and low blood pressure. Long-term use of green tea reduces systolic and diastolic blood pressure. It reduces total cholesterol. This causes a smooth blood flow and thus reduces the risk of cardiovascular disease. While green coffee contains the chlorogenic acid present in the bean, unroasted coffee, which works to reduce blood pressure in patients with mild hypertension. It also improves the elasticity of the arteries, which contributes to lowering blood pressure. Having black tea with three cups over a period of 6 months can lower your blood pressure. Black tea reduces systolic blood pressure by 2 mmHg and diastolic blood pressure by 3 mmHg. This is due to an improvement in the function of the endothelium, which has a side effect on blood pressure.

### **Effect of Alcohol Consumption on Blood pressure**

An association between alcohol and hypertension was first reported by Lian in 1915, who noted an increased prevalence of hypertension among French soldiers drinking more than 2 litres of wine a day [39]. The relation between alcohol and blood pressure has lately been highlighted by several research groups. Is alcohol helpful or harmful? Acutely, alcohol causes a modest fall in blood pressure but continued consumption of more than the amount contained in two usual portions a day (one



portion contains 10–12 g of ethanol) results in a dose-dependent rise in blood pressure [40]. The acute hypotensive effect is induced by peripheral vasodilation despite a slight increase in cardiac output [41]; the chronic hypertensive effect may reflect a shift of calcium into vascular smooth muscle cells that is coupled with an outward shift of magnesium [42]. Mousa (2005) showed that moderate to moderate alcohol consumption significantly normalizes blood pressure within one hour in a patient with high blood pressure ( $P < 0.001$ ). This hypotensive effect lasted no more than a day after consuming alcohol. Previous studies revealed a slight or heavy persistence Alcohol drinkers had higher blood pressure than non-drinkers of light or intermittent alcohol[43]. It was concluded that drinking light or moderate alcohol High blood pressure cannot be controlled continuously, but it can only reduce blood pressure within a limited period of time. Therefore, it does not have to be alcohol t is recommended for patients with high blood pressure. Also, high blood pressure patients who are not receiving medical treatment should not be considered normal blood pressure patients their blood pressure is measured after light light or moderate alcohol. Blood pressure should be measured while the patient is not under the influence of alcohol, otherwise, measuring shortly after alcohol consumption may lead to a misleading result. This coincides with Japanese study results revealed that alcohol is ingested Blood pressure drops sharply as the blood vessels dilate Friendly activation in the eastern themes [44], as is In agreement with other studies [40, 41].

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