

Biochemical Study of the Effect of Soybean on the Heart

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ABSTRACT

The current study examined the effect of soybean in reducing the incidence of chronic heart disease and others. Soybeans are a staple food for Asian peoples, and eating this food is linked to many health conditions such as lower rates of heart disease and some types of cancer. Soybeans prevent fatty accumulations on the walls of the arteries, which reduces the incidence of atherosclerosis, stroke and heart attacks because it contains isoflavones, which reduces the level of harmful cholesterol in the body and also contributes to preventing heart attack, as well as lecithin, which breaks down cholesterol in the blood. Thus, it reduces the incidence of heart disease.

Soybeans were ranked among the list of the five healthiest foods in the world in the Journal of Health (2009) due to the many studies that show that soy is good for the heart and blood vessels and reduce the risk of cancer including breast, prostate and colon cancer and improves bone health. The study showed a significant decrease in the rates of breast, uterine and heart cancers in many Asian countries where soybeans are the main food, while the incidence of these diseases increases in Western countries that adopt different diets characterized by a high percentage of fat and meat in them.

Keyword: Soybean, Heart Disease, Cholesterol.

- Proteins: 35 grams
- Cholesterol: 0

Introduction

Soybean Scientific name (*Glycine max*) A plant belonging to the legume family classified as an oilseed It has been used in China for 5000 years as food and manufacture of fishing Basic energy for basic proteins for basic energy for basic energy [1].

Soybeans were first developed in East Asian regions thousands of years ago. Soybean products, especially fermented ones, contain various additives including peptides, isoflavones, etc. It is cultivated as a commercial crop in more than 35 countries [2].

Nutritional information.

Each 100g of raw soybeans according to the USDA contains the following nutritional information [3]:

- Calories: 147
- Fat: 6.80
- Saturated fat: 0.78
- Carbohydrates: 11.05
- Fiber: 4.2

Nutritional And Medicinal Benefits of Soybeans

Soy is considered one of the nutritionally integrated proteins because it contains all the amino acids that the body needs to build a chain of proteins. It also contains water-soluble chemicals (isoflavones), which are powerful antioxidants known as estrogen. Excess or deficiency of natural estrogen in the body, which is present in some places such as the breast or uterus, is harmful [4]. Soybeans also contain both (Daidzein and Genistein) plant estrogens that equal the effect of estrogen when the percentage is increased or decreased, and this means that they reduce the risk of cancerous diseases related to hormones, such as breast cancer. Isoflavones prevent the prostate from increasing in size and reduce the porosity of the cells that make up the prostate gland. Cholesterol-free and works to reduce high levels of either total cholesterol, triglycerides or LDL [5]. It helps prevent atherosclerosis and the accumulation of fats and helps control blood pressure. Helps maintain blood vessels in good condition, which protects the body from many damages

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such as free radicals, activates the immune system, reduces blood clots, and avoids heart attacks and strokes. The soluble fiber in it regulates glucose levels, purifies the kidneys, controls sugar levels in people who suffer from it, and protects against kidney disease. It activates and regenerates cells in the brain [6]. Reduces the accumulation of normal and triglyceride fats in the liver. It prevents the accumulation of fat on the walls of the arteries, which leads to protecting them from hardening. Protects against Alzheimer's disease and other benefits.

Functional components of soybeans and their impact on the health of the body

Protein

Vitamin Soy is 35-50% protein on a dry weight basis, 90% of which is made up of two types of stock glycinin (S-glycinin and β -conglycinin). Proteins contain all the amino acids necessary for human nutrition, which makes soy products almost equivalent to seed proteins in the proportion of proteins [7]. less than saturated fats and cholesterol. Soybeans also draw on components of biologically active proteins such as hemagglutinin, trypsin inhibitors, alpha-amylase and lipoxygenases. Increased protein glycemia [8].

Oil

Soybean oil contains about 19% oil, in which triglycerides are the main component. Soybean oil is characterized by relatively large amounts of polyunsaturated fatty acids (PUFA), 55% linoleic acid and 8% alpha-linolenic acid of the total fatty acids. Linoleic acid is an essential fatty acid that performs important physiological and nutritional functions. As well as alpha-linolenic acid, which plays an important role in the regulation of metabolic pathways [9].

Carbohydrates

Soybeans contain 35% of carbohydrates, most of which are non-starchy sugars and also contain a small percentage of disaccharides such as stycose 4%, raffinose 11%. Carbohydrates consist mainly of insoluble dietary fiber [10]. Soybean extract contains soluble polysaccharides in galacturonic acid and the polysaccharides have been used to modify the physical properties of various foods [2,11].

Vitamins and minerals

Soybeans are the best source of Vitamin B (B1, B2, B6) and Vitamin E. Compared to cereals though, it lacks vitamin B12 and vitamin C. It also contains tocopherols which are excellent natural antioxidants [12]. Soybean oil also contains α -tocopherol, β -tocopherol, γ -tocopherol, and δ -tocopherol. It contains 5% of minerals that are relatively rich in calcium, magnesium and iron [10].

Isoflavones

Isoflavones are a subgroup of the phenolic group, heterocyclic, called flavonoids. Besides isoflavones, other subcategories of flavonoids also include flavones, flavonols, flavanols, auronones, red and blue anthocyanin pigments and chalcones. In the isoflavones of the phenyl ring B bound to the 3rd site of the 1,4-benzopyrone ring, soybeans are the most abundant source of isoflavones, which improve the digestive system, prevent breast and prostate cancer, osteoporosis and improve lipid metabolism [13].

Phytosterols

The main components of soybean citrulline are β -sitosterol (53 to 56%), campesterol (20 to 23%), and stigmasterol (17 to 21%). has a role in Lower blood cholesterol, improve prostate [10].

Phospholipids

Soybeans contain 1-3% phospholipids, 35% phosphatidyl, phosphatidyl α -choline, 25% ethanolamine, 15% kphosphatidyl inositol, 5-10% phosphatidic acid [13].

Saponins

Soybeans contain 2% soy saponins (triterpene glycosides) which are currently attracting a lot of scientific interest. Soybean saponins possess unique chemical structures and physiological functions. Antioxidant, Antioxidant, Antioxidant, Antioxidant, Immunovirus, Liver Disease, Antioxidant, Antidepressant [11].

Ferritins

Soybeans contain ferritin, an iron-storage protein. Studies have shown that the iron absorbed from soybean ferritin is more bioavailable than animal products. Therefore, it is recommended to include soybeans in the diet of people suffering from anemia [12].

Alpha linoleic acid: improves heart health

Lecithin: It has a role in improving fat metabolism, improving memory and learning abilities

Lectins: anti-cancer, immune stimulant

Linoleic acid: lowers blood cholesterol

Soybeans and cardiovascular disease

Cases of cardiovascular disease, breast Recent studies in reducing the risk of cardiovascular disease, breast, prostate, colon and breast, as it is a factor in the prevention of osteoporosis, cardiovascular disease has become one of the major health problems all over the world including countries. Cardiovascular diseases include all diseases that affect the heart and blood vessels, such as coronary heart disease (CHD), coronary artery disease, dyslipidemia, and high blood pressure [13]. The US Food and Drug Administration (FDA) has issued licenses for the use of soy food labels, which states that a daily diet containing 25 g / day of soy protein reduces heart disease and leads to a decrease in saturated fats, cholesterol in the blood by 9.3% and LDL cholesterol (LDL by 12.9% and high-density lipoprotein cholesterol (HDL) by 2.4% because it contains (protein, isoflavones, fiber, trypsin inhibitors, saponins). In addition to its importance for children in the growth age, as they need proteins more than an adult person because it contains phyto, some enzymes and proteins that help children grow and increase immunity There are various hypotheses to explain the mechanisms of the effect of soy protein. [1] One of these hypotheses is that the amino acid synthesis in soybeans changes cholesterol metabolism. Probably due to changes in the endocrine state, because there are changes in insulin: glycogen ratio and thyroid hormone concentrations. As well as an increase in plasma concentrations of thyroid hormone, which is related to lowering plasma cholesterol Click or tap here to enter text.

Another hypothesis suggests that non-protein components such as saponins, fibres, phytic acid, minerals and isoflavones bind with soybean protein to influence cholesterol metabolism [11].

In vitro experiments and studies conducted have shown positive effects of isoflavones in a variety of models of atherosclerosis. Lowering plasma histidine levels, preventing LDL oxidation and improving vascular reactivity. inhibiting proinflammatory cytokines, or cell attachment to proteins. Inhibition of reactive nitrogen species, as well as reducing platelet aggregation. Legumes are relatively rich in soluble fiber, which may play an important role in preventing heart disease Click or tap here to enter text [1]. The main effects of soybean fiber soluble in serum lipoproteins must be associated with bile acid reabsorption with a decrease in bile acid reabsorption [3]. Thus, there is an increase in cholesterol used to synthesize bile acids. Also, fermentation of soluble fiber in the colon produces short chain fatty acids that contribute to reducing cholesterol synthesis in the liver. Studies have shown that probiotic acid, one of the short-chain fatty acids, reduces cholesterol in the liver. In addition, reducing the synthesis of cholesterol in the liver leads to a decrease in insulin concentrations in the blood, which in turn reduces the activity of the enzyme that participates in the synthesis of cholesterol. Perhaps on the other hand, it may also be a result of a change in bile acids in the liver. There is also a hypothesis that isoflavones may prevent the development of atherosclerosis, because it has antioxidant properties LDL, which generates a series of mechanisms that produce atherosclerotic deposits, in addition to that isoflavones possess a hypocholesterolemic effect due to the interaction of isoflavones with estrogen receptors, the concentration of cholesterol in the blood may reduce This mechanism is also. Another component of soybeans called phytosterols, the mechanism underlying the plant citrulline's ability to lower plasma LDL cholesterol levels is related to cholesterol-like structures. This allows it to compete with cholesterol for incorporation into micelles. In short, the different components of soybeans may independently contribute towards overall heart health benefits [13].

Conclusion

Soybeans are a staple food for Asian peoples, and eating this food is linked to many health conditions such as lower rates of heart disease and some types of cancer. Soybeans prevent fatty accumulations on the walls of the arteries, which reduces the incidence of atherosclerosis, stroke and heart attacks because it contains isoflavones, which reduces the level of harmful cholesterol in the body and also contributes to preventing heart attack, as well as lecithin, which breaks down cholesterol in the blood. Thus, it reduces the incidence of heart disease.

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