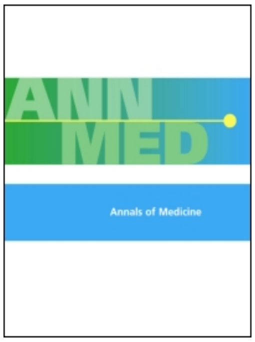

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REVIEW ARTICLE

The role of potatoes and potato components in cardiometabolic health: A review

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Potatoes (*Solanum tuberosum*) are an important food crop worldwide and contribute key nutrients to the diet, including vitamin C, potassium, and dietary fiber. Potatoes and potato components have been shown to have favorable impacts on several measures of cardiometabolic health in animals and humans, including lowering blood pressure, improving lipid profiles, and decreasing markers of inflammation. A range of glycemic index (GI) values have been reported for potatoes, and data are sparse regarding the impact of potato consumption on the postprandial glycemic response, especially when potatoes are consumed with other foods. There is a lack of clinical trial data regarding the impact of potatoes on weight management. A small number of human cohort studies have reported beneficial associations between potato consumption as part of a healthy lifestyle and cardiometabolic health. Another small number of human population studies have included potatoes as part of a dietary pattern with other calorie-dense foods and have not reported cardiometabolic benefits. The epidemiological literature should be interpreted with caution due to lack of consistency in both defining dietary patterns that include potatoes and in control for potential confounding variables. Controlled clinical trials are needed to define the impact of potatoes on cardiometabolic health.

Key words: Diet, metabolic cardiovascular syndrome, nutritive value, Solanum tuberosum

Key messages

- Potatoes contribute key nutrients to the diet, including vitamin C, potassium, and dietary fiber.
- Potatoes and potato components have a favorable impact on several measures of cardiometabolic health.
- Controlled clinical trials are needed to define the impact of potatoes on cardiometabolic health.

Introduction

Potatoes (*Solanum tuberosum)* are economically the fourth most important food crop in the world and the leading vegetable crop in the United States (1). As a component of the diet they make a significant contribution to the intakes of several key nutrients, including vitamin C, potassium, and dietary fiber. Potatoes have a more favorable overall nutrient-to-price ratio than many other fruits and vegetables and are an affordable source of nutrition worldwide (2).

The impact of potatoes on human health in general has been reviewed, in part, by Camire et al. (3). However, the purpose of this review is to provide a brief overview of potato nutrition and composition followed by an examination of the role of potatoes, potato components, and potato extracts on measures of cardiometabolic health with a focus on blood pressure, blood lipid profiles, inflammation, glycemic response, body weight, and risk factors for metabolic syndrome (MetS). MetS is a group of interrelated factors that increases risk of both cardiovascular disease (CVD) and type 2 diabetes. Risk factors defined by the National Cholesterol Education Program (NCEP) Adult Treatment Panel (ATP III) include abdominal obesity, atherogenic dyslipidemia, elevated blood pressure, and elevated plasma glucose (4).

Animal studies, human population studies, and available human intervention studies available in PubMed are included in this non-systematic review. More than 100 key search terms related to cardiovascular and metabolic parameters as well as potato (*Solanum tuberosum*) were used to search the PubMed literature for relevant references. The focus was then centered on combinations that were in line with the purpose stated above, giving priority to new findings and congruity of the collected evidence.

Potato nutrition and composition

Macronutrients

The macronutrient content of potatoes prepared by three common methods is presented in Table I. Potatoes contain a very small amount of naturally occurring sugars and fat (Table I). Dietary fiber is contained both in the potato tuber and peel (periderm).

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Table I. Macronutrient content of 100 g of potato prepared by common methods.[a]

Nutrient	Units	Russet, baked, flesh + skin [b]	Boiled in skin, flesh only [c]	French fries, frozen and oven heated
Water	g	74.45	76.98	61.51
Energy	kcal	97	87	172
Energy	kJ	406	364	720
Protein	g	2.63	1.87	2.66
Total lipid	g	0.13	0.10	5.22
Carbohydrate	g	21.44	20.13	28.71
Total dietary fiber	g	2.3	1.8	2.6
Total sugars	g	1.08	0.87	0.28
Fatty acids, total saturated	g	0.034	0.026	1.029
Fatty acids, total monounsaturated	g	0.003	0.002	3.237
Fatty acids, total polyunsaturated	g	0.056	0.043	0.321
Cholesterol	mg	0	0	0

[a]Data obtained from the USDA National Nutrient Database for Standard Reference, Release 25 (2012), accessed November 2012.
[b]A medium baked Russet potato 2.25–3.25 inches in diameter weighs 173 g.
[c]A 2.5-inch diameter boiled potato weighs 136 g without the skin.

One medium baked Russet potato with skin contributes 2.3 g of dietary fiber or 9% of the US Daily Value (Table I).

Starch is the predominant carbohydrate in potatoes and constitutes a mixture of amylose (straight-chain glucose polymer) and amylopectin (branched-chain glucose polymer) in a ratio of 1:3. Raw potato starch has a crystalline structure that is resistant to human digestive enzymes, while cooking gelatinizes the starch resulting in increased solubility and digestibility. Cooling for a few hours after cooking brings another change in structure, called retrogradation, making the potato starch once again more resistant to digestive enzymes (5). These changes in properties are related to the relative ratio of amylose to amylopectin and to the amount of phosphorylated glycosyl residues, which are present at higher levels in potato starch than in other starches. These residues add to the digestive resistance of the starch (6,7).

Resistant starch is starch that is 'resistant' to digestion in the small intestine and is found naturally in plant foods such as under-ripe bananas, legumes, potatoes, and some whole grains. Resistant starch that escapes digestion in the small intestine is fermented in the large intestine to produce short-chain fatty acids (SCFAs) and acts as a prebiotic by promoting the growth of beneficial colonic bacteria (8). Boiled potatoes were reported to have a resistant starch content of 2.0% of total starch, while commercially processed potato products had a higher resistant starch content of 4.8% to 9.0% of total starch (9).

Potatoes contain low amounts of protein (2 g/100 g dry matter of protein, or 1%–1.5% of fresh weight) but, due to their high consumption in US diets, contribute roughly 3%–3.5% of the total daily protein intake of US adults (10). While potatoes contain small amounts of protein, the protein they do contain has a high biological value (BV) with a BV of 90 to 100 compared with whole egg (BV 100), soybean (BV 84), and beans (BV 73). The Protein Digestibility Corrected Amino Acid Score (PDCAAS) is a measure of protein quality based on the amino acid requirements of humans and their ability to digest them. While it does not appear that this score has been calculated for potato protein as it was not found in the literature, available information indicates that, compared to cereal proteins, lysine content is higher in potatoes and the limiting amino acid may be methionine or isoleucine depending on the variety (11). With regard to allergenicity, potatoes are gluten-free but do contain patatin (the major protein in potatoes) which can be an allergen for some people (3,11).

Peptides isolated from potato protein have been shown to have antioxidant activity (12), exhibit angiotensin-converting enzyme (ACE) inhibition *in vitro* (13), and may have a favorable impact on serum lipids (14). Peptides from potato extracts (such as the protease inhibitor 2, PI2) may suppress appetite with satiation effects and are being tested for potential clinical applications (15). However, as stated earlier, these proteins and peptides are found in relatively low concentrations in the whole potato, and whether they are in high enough concentrations to have an effect as found naturally in the potato is unknown.

Micronutrients

The micronutrient content of potatoes prepared by different cooking methods is presented in Table II. Vitamin C (ascorbic acid) is the predominant vitamin in potatoes, and the amount is influenced by type of cultivar, planting site, and storage conditions (16). Potatoes are an important dietary source of bioavailable vitamin C throughout the world (3,17). In the US, potatoes are labeled as an excellent source of vitamin C (contain $\geq 20\%$ of the daily value) and rank in the top five dietary sources of vitamin C (18). They are also a good source ($\geq 10\%$ of the daily value per serving) of vitamin B_6 and potassium. In fact, on a gram for gram basis, they contain more potassium than other fruits and vegetables including bananas, oranges, and mushrooms. In addition, potatoes are a dietary source ($\geq 2\%$ of the daily value per serving) of folate, riboflavin, and thiamin; provide phosphorus, magnesium, and iron; and are very low in sodium. The nutrient content of potatoes is influenced by preparation and cooking methods, particularly vitamin C which is heat and oxygen labile (19). Frozen, oven-heated French fries are also a good source of vitamin C and potassium and provide vitamin B6 folate, riboflavin, thiamin, phosphorus, magnesium, and iron (Table II).

Phytonutrients/antioxidants

Potatoes contain a variety of phytonutrients including carotenoids, polyphenols, anthocyanins, and phenolic acids. They are the largest contributor of vegetable phenolics to the American diet (20), and total phenolic content of the potato has been correlated with total antioxidant activity (21,22).

Carotenoids are yellow, orange, and red lipid-soluble pigments synthesized by yeast, fungi, bacteria, and higher plants and function as antioxidants. Potato cultivars with yellow flesh contain primarily lutein along with trace amounts of other pigments including β-carotene, zeaxanthin, and others (23). Total carotenoid content of potatoes ranges widely from 35 μg to 795 μg per 100 g fresh weight. Dark yellow cultivars contain approximately 10 times more total carotenoid than white-flesh cultivars (24).

Table II. Vitamin and mineral content of 100 g of potato prepared by common methods.[a]

Nutrient	Units	Russet, baked, flesh + skin [b]	Boiled in skin, flesh only [c]	French fries, frozen and oven heated
Vitamin C	mg	8.3	13.0	13.3
Thiamin	mg	0.067	0.106	0.128
Riboflavin	mg	0.048	0.020	0.031
Niacin	mg	1.348	1.439	2.218
Vitamin B_6	mg	0.354	0.299	0.184
Folate, total	μg	26	10	28
Vitamin A, RAE[d]	μg RAE	1	0	NA
Vitamin A, IU	IU	10	3	NA
Vitamin E (alpha tocopherol)	mg	0.07	0.01	0.11
Vitamin K	μg	2.0	2.1	2.5
Calcium	mg	18	5	12
Iron	mg	1.07	0.31	0.74
Magnesium	mg	30	22	26
Phosphorus	mg	71	44	97
Potassium	mg	550	379	451
Sodium	mg	14	4	32
Zinc	mg	0.35	0.30	0.38

NA = not available
[a]Data obtained from the USDA National Nutrient Database for Standard Reference, Release 25 (2012), accessed November 2012.
[b]A medium baked Russet potato 2.25–3.25 inches in diameter weighs 173 g.
[c]A 2.5-inch diameter boiled potato weighs 136 g without the skin.
[d]RAE = Retinol activity equivalent (Each μg RAE corresponds to 1 μg retinol or 12 μg of beta-carotene).

Antioxidant polyphenols in potatoes include phenolic acids (caffeic acid, chlorogenic acid, ferulic acid, and gallic acid) and the colored anthocyanin pigments. Anthocyanins are red, blue, and purple water-soluble flavonoid pigments that also have antioxidant activity. They are found in the skin and flesh of potatoes with this coloration, and their content can range from 9.5 mg to 38 mg per 100 g fresh weight (24).

Potato contribution to the diet

There is a lack of published data on the consumption of potatoes and contribution of potatoes to the diets of different populations. Two recent studies using US National Health and Nutrition Examination Survey (NHANES) data are reviewed here. Potatoes, including oven-baked fries and French fries, contribute key nutrients to diets of children, adolescents, and adults, based on analyses of NHANES data (10,25). Approximately 35% of children and adolescents participating in NHANES 2003 to 2006 reported consumption of potatoes (white potatoes, oven-baked fries, or French fries), while only 18% reported consuming French fries on the day of the recall (25). Total potato products provided 8%–9% of total daily energy, while French fries (baked and oven heated) provided 9%–12% of total energy, which was within energy requirements for all potato consumers. Potato products contributed 8%–10% of daily fat, while French fries contributed 13%–15% of total fat of which more than 75% was monounsaturated (MUFA) and polyunsaturated fatty acids (PUFA). Nutrients provided by potato products, including French fries, were ≥10% of daily intake of dietary fiber, vitamin B_6, and potassium; 5% or more of thiamin, niacin, vitamin C, vitamin E, vitamin K, phosphorus, magnesium, and copper; and less than 5% of sodium intake for all age groups. Among adult NHANES 2003 to 2006 participants, potatoes, including French fries, provided 7%–11% of total daily energy (within daily energy requirements) and 3%–14% of daily fat (≥75% MUFA and PUFA) (10). Potato products also provided ≥15% daily dietary fiber; ≥13% vitamin B_6 and potassium; ≥10% vitamin C; ≥5% thiamin, niacin, vitamin E, folate, phosphorus, magnesium, and copper; and <5% daily sodium. Dietary fiber and potassium were identified as nutrients of concern for all age groups in the Dietary Guidelines for Americans, 2010 (26). Mean intake of dietary fiber in this NHANES study ranged from 13.8 to 17.9 g/day, while mean potassium intake ranged from 2514 to 3468 mg/day (10).

Cardiometabolic health effects of potatoes and potato components

Blood pressure

Potatoes contain several nutrients that contribute to a dietary pattern to lower blood pressure (BP). Potatoes contain more potassium than other fruits and vegetables and are very low in sodium (27). They are an important dietary source of vitamin C and also provide magnesium, calcium, vitamin B_6, niacin, and folate. In a scientific statement promoting dietary approaches to prevent and treat hypertension, the American Heart Association reports that evidence from animal studies, observational studies, and more than 30 human clinical trials have associated high potassium intake with reduced blood pressure (28). The American Heart Association also encourages increased potassium intake by increased consumption of fruits and vegetables rich in potassium rather than supplements (28). The US Food and Drug Administration (FDA) has approved a health claim for foods that are good sources of potassium and low in sodium, such as potatoes, and reduced risk of high blood pressure and stroke (29). In addition to potassium, increased intakes of calcium, magnesium, and vitamin C are associated with lower BP (28,30). Niacin, folate, and vitamin B_6 intakes are also associated with lower blood pressure and cardiovascular health (31–33).

Proteins isolated from potatoes and potato products exhibit angiotensin-converting enzyme (ACE) inhibitory action. Protein isolates from mature potato tubers and potato by-products, including potato pulp and peel, have been shown to exhibit ACE inhibitory action *in vitro* (13,34). Results of these studies suggest that potato may be a source for bioactive compounds that benefit cardiovascular health.

In the first human study to investigate the effect of potatoes on blood pressure, Vinson et al. (35) fed purple-pigmented potatoes (Purple Majesty cultivar) to 18 overweight (average BMI of 29), hypertensive adult subjects for 4 weeks in a cross-over design. Subjects consumed six to eight (~138 g) small microwaved purple potatoes twice daily. The comparison treatment was no potato consumption. Consumption of purple potatoes reduced systolic BP by 5 mmHg (3.5%, not significant) and reduced diastolic BP by 4 mmHg (4.3%, $P < 0.01$) compared to baseline. There were no significant changes in weight, fasting glucose, serum lipids, or HbA1c during the potato consumption period.

Blood lipids

Animal and human studies have reported beneficial effects of potatoes and potato components on blood lipids and lipoproteins. Animal models with rats have shown that feeding potato protein resulted in reduced serum total cholesterol, increased fecal bile acid, and neutral steroid excretion compared to casein (36). Lower concentrations of total and low-density lipoprotein (LDL)-cholesterol were also reported in pigs fed potato protein compared to casein (37). Rats fed a cholesterol-free diet containing 20% potato peptides had higher high-density lipoprotein (HDL)-cholesterol and lower triglyceride and non-HDL-cholesterol compared to casein-fed controls (14). Retrograded starch from two varieties of potato pulp lowered serum total cholesterol and triglyceride levels compared to controls (38). Rats fed one variety of potato had reduced cholesterol levels and higher levels of fecal bile acids, while rats fed the second variety exhibited reduced triglyceride concentrations and lower hepatic mRNA level of fatty acid synthase and of sterol regulatory element-binding protein-1c (SREBP1c). Gelatinized potato starch containing a high level of phosphorus reduced serum triglycerides and free fatty acids and increased fecal bile acid excretion compared to a sucrose control in rats (39). Feeding rats a whole potato-enriched diet for 3 weeks decreased total cholesterol and triglycerides compared to both baseline and to starch- and sucrose-fed controls in two studies (40,41). Rats fed potato peels had a reduction in plasma total cholesterol compared to cellulose-fed rats (42). In addition to these animal studies, bile acid binding by extruded potato peels has been demonstrated in an *in vitro* model (43).

Limited human studies have investigated the effect of potatoes or potato components on postprandial and fasting lipids. Potato fiber ingestion decreased postprandial plasma levels of total and esterified cholesterol but had no effect on fasting levels in healthy subjects (44). In subjects with MetS, consumption of an oat, wheat bran, and potato diet for 12 weeks lowered cholesterol synthesis compared to baseline (45).

Inflammation

Markers of systemic inflammation include C-reactive protein (CRP) and the proinflammatory cytokine interleukin-6 (IL-6). Serum levels of these markers are modifiable by diet. An analysis of 1999–2002 NHANES data for participants ≥ 6 years old reported an association between consumption of whole plant foods including potatoes and lower CRP levels (46). In the first human study to investigate the effects of potato consumption on inflammation, Kaspar et al. (47) fed 150 g of cooked white- (WP), yellow- (YP), or purple-flesh (PP) potatoes once daily for 6 weeks to healthy men. Men who consumed PP had a lower CRP concentration than the WP group. Both the YP and PP groups had lower levels of IL-6 compared to the WP group along with lower levels of 8-hydroxydeoxyguanosine (8-OHdG), a marker of oxidative DNA damage. Pigmented potato consumption reduced inflammation in healthy subjects.

Glycemic index, blood glucose response, and type 2 diabetes

There is currently much controversy in the scientific community regarding the value of the glycemic index (GI) and the impact of glycemic response on the development of type 2 diabetes (T2D) (48,49). This review is not intended to debate these issues but only to provide an overview of the published literature as this literature is often used to influence dietary recommendations and policy decisions. The authors refer readers to recent reviews on these subjects (49–51) as well as the published opinion of the European Food Safety Authority (52). For the purposes of this review GI is defined as a ranking of carbohydrate-containing foods according to their effect on blood glucose levels. It compares 50 g of available carbohydrate from the test food with 50 g of carbohydrate from a reference, typically glucose (50,53). Glycemic response is not formally defined in the literature but generally refers to the changes in blood glucose after consuming a carbohydrate-containing food (53).

Postprandial glycemic response to carbohydrate ingestion is influenced by carbohydrate source and amount (54), the degree of starch gelatinization (55), and the type and amount of fiber present (56–58). For potatoes, the GI is also influenced by variety and cooking method (59). Reported GI values ranged from intermediate (boiled red potatoes consumed cold: 56) to moderately high (baked US Russet potatoes: 77) to high (instant mashed potatoes: 88; boiled red potatoes: 89) (59). Another report of potato GI values examined eight varieties of commercially available potatoes in Great Britain and reported a range from 56 to 94 (60). French fries were reported to have a significantly lower glycemic response compared to boiled potatoes (61).

In addition, potatoes and other carbohydrate-containing foods are often consumed with other foods as part of a meal or with added ingredients which can influence the postprandial glycemic response and/or GI value. In healthy adults, the addition of cheddar cheese to baked potato reduced the GI to a value considered to be low (62). Combining mashed potato with chicken breast and salad reduced the GI value of the test meal to 54 compared to a value of 108 for mashed potato alone (63). In subjects with type 2 diabetes (T2D), the addition of vinegar to a high GI meal of mashed potatoes and low-fat milk reduced the postprandial glycemic response (64).

A review of the epidemiological literature uncovers conflicting reports regarding potatoes as part of a dietary pattern and risk of T2D. In a large cohort of Finnish men and women, potatoes, along with butter and whole milk, were part of a dietary pattern associated with increased risk of T2D (65). Data from the Women's Health Study reported a positive association between intake of potatoes and diabetes risk that became statistically non-significant after adjustment for known diabetes risk factors (66). In the Nurses' Health Study, potato and French fry consumption were both positively associated with risk of T2D after adjustment for age and dietary and non-dietary factors. However, when stratified by BMI, potato consumption, but not French fry consumption, was significantly associated with increased risk of T2D only for women with BMI ≥ 30 (67). Fried potatoes were part of a dietary pattern that was associated with increased likelihood of T2D in men and women (68).

Other reports show an inverse relationship of potatoes with glycemia or risk of T2D. Consumption of potatoes, along with vegetables, legumes, and fish, was inversely and independently associated with the 2-hour glucose level during 20 years of follow-up (69). A Mediterranean dietary pattern that included potatoes was associated with a lower predictive score for T2D (70). In a Japanese cohort potatoes were part of a 'healthy' diet pattern associated with a lower risk of diabetes (71).

Such conflicting reports are not unusual with epidemiological studies as they are not designed to show cause and effect, but rather attempt to show an association between diet and risk of a disease or condition. Randomized controlled intervention trials investigating the relationship between potatoes and T2D are needed to separate potato consumption from other known risk factors. In addition, carefully controlled studies examining the impact of potato varieties, potato products as part of a meal, and potato products with different ratios of amylase:amylopectin (different resistant starch levels) on postprandial glycemic response over the short and long term are needed to clarify further the relationship between potato consumption, glycemic response, and T2D.

Body weight/abdominal obesity

There is a lack of clinical trial data regarding the relationship of potatoes with body weight and/or waist circumference. Many of the cohort studies in the literature group potatoes into a dietary pattern with other calorically dense foods. However, according to the USDA National Nutrient Database (Standard Reference Release 25), compared to other common carbohydrate sources such as white bread, pasta, and rice, potatoes (other than French fries) have a lower energy density and provide fewer calories per gram of food (27). Consumption of calories from any food or food group in excess of need will result in positive energy balance and weight gain. One study that identified five dietary patterns reported an increase in mean annual change in BMI for the 'meat and potatoes' pattern in men and women (72). Women who consumed a Western diet pattern that included potatoes had greater weight gain over 9 years (73). For women, but not men, intake of potatoes was positively associated with 5-year difference in waist circumference (74). Overweight elementary school children were reported to consume larger portions of French fries compared to normal-weight children (75). French fry consumption was also associated with obesity in 18–55-year-old adults (76). In three large cohorts of men and women, 4-year weight change was positively associated with intake of potato chips and potatoes (77). In contrast to these reports, one prospective cohort study of dietary fiber and changes in weight and waist circumference reported that fiber from potatoes, nuts, and legumes was not significantly associated with subsequent changes in weight or waist circumference (78).

These cohort studies have several potential limitations, such as lack of consistent control for similar confounding variables, lack of adjustment for total energy intake or physical activity, and incomplete dietary data. Well-designed epidemiological studies investigating the association of potato (in all forms) and French fry intake on body weight and waist circumference and controlling for confounders, including total calories and physical activity, are needed. No clinical trials exploring the direct impact of potatoes on body weight or waist circumference were identified, thus research in this area is also needed to understand cause and effect relationships.

Population studies

Few population-based studies have investigated the association of potato consumption with biomarkers or disease outcomes. Potatoes as part of a dietary pattern have been studied in relation to several risk factors for MetS and/or CVD in healthy subjects. In several population studies potatoes were grouped with other foods as part of a dietary pattern associated with increased risk factors. Potatoes, along with red meat and lower intakes of low-fat dairy and fruit, were associated with higher BP and higher levels of HDL- and total cholesterol and glucose in the general Dutch population (79). An additional population study reported an association with increased risk of MetS for a dietary pattern that included potatoes along with refined grains, red and processed meat, high-sugar beverages, eggs, beer, sweets, and butter (80). Since potatoes were grouped with other energy-dense foods in these studies, the contribution of potatoes alone cannot be determined.

In contrast to the population studies that report increased risk for diet patterns that include potatoes, there are a few studies that report beneficial associations with risk factors. Potatoes were included as one of 11 components of a Mediterranean diet pattern in a Greek cohort assessed with a semi-quantitative food frequency questionnaire (81). A diet score was calculated based on the participants' frequency of consumption of the Mediterranean diet component foods. The score was inversely associated with systolic BP, CRP, fibrinogen, total serum cholesterol, and oxidized LDL concentrations. The score was also inversely associated with acute coronary syndrome risk. A 10-point increase in a similar Mediterranean dietary pattern score that included potatoes was associated with a 4% lower 10-year CHD risk (70). In a Korean cohort of adults at risk for MetS, including potatoes as part of a breakfast pattern along with fruit and nuts was associated with lower risk of both elevated BP and elevated fasting plasma glucose (82). Buyken et al. (83) followed a group of Australian men and women for 13 years with end-points of cardiovascular mortality or death from inflammatory disease. Hazard ratios for carbohydrate-containing foods and mortality revealed a trend ($P = 0.06$) for reduced risk in men, but not women, with increasing potato consumption. Lipsky et al. (46) reported adjusted relationships between plant food diet patterns both including and excluding potatoes. No differences were reported for serum lipids, fasting glucose, or CRP according to inclusion or exclusion of potatoes.

Potatoes as part of total vegetable intake have been studied in subjects with type 2 diabetes. Participants enrolled in the Japanese Elderly Diabetes Intervention Trial with type 2 diabetes had significant decreases in HbA1c, triglycerides, and waist circumference with an intake of 200 g total vegetables including potatoes compared to lower vegetable intakes (84).

As previously discussed, human cohort studies have several potential limitations and cannot show causality. The potential impact of potato consumption on measures of cardiometabolic health may depend in part on the foods they are grouped with as part of a dietary pattern.

Conclusions

Potatoes contribute key nutrients to the diet including vitamin C, potassium, and dietary fiber. Potatoes and potato components have been shown to have favorable impacts on several measures of cardiometabolic health in animals and humans, including lowering BP, improving lipid profiles, and decreasing markers of inflammation. Data are sparse regarding the impact of potato consumption on the postprandial glycemic response, especially when potatoes are consumed with other foods. There is a lack of clinical trial data regarding the impact of potatoes on weight management. A small number of human cohort studies have reported beneficial associations between potato consumption as part of a healthy lifestyle and cardiometabolic health. These human cohort studies suggest a possible role for potatoes as part of a dietary pattern that reduces metabolic risk factors and inflammatory markers. The scientific literature should be interpreted with caution since the impact of potato consumption on disease risk factors may be dependent on which other foods potatoes are grouped with as part of a diet pattern.

Declaration of interest: Author JD is a scientific advisor and member of McCain Global Health and Wellness Advisory Board.

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