Nutritionally Embedded *Asparagus* Sp. for Healthcare

By

Bina Rani, Murtaza Abid, Harsukh Chharang and Raaz K. Maheshwari

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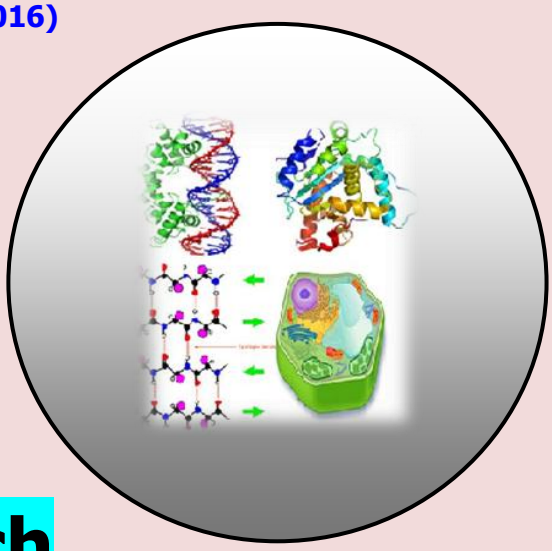

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Dr. Bina Rani
http:// www.sasjournals.com
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jbiolchemres@gmail.com

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Bina Rani, *Murtaza Abid, **Harsukh Chharang and
****Raaz K. Maheshwari**

Department of Chemistry and Environmental Engineering, Poornima College of Engineering, Jaipur, Rajasthan, India
***Department of Biochemistry, King George's Medical College, Lucknow, U.P., India**
****Department of Chemistry, SBRM Govt PG College, Nagaur, Rajasthan, India**

ABSTRACT

Asparagus is a great source of vitamins, minerals, and essential proteins. It is rich in vitamin A, vitamin B1 (thiamine), vitamin B2 (riboflavin), vitamin B3 (niacin), vitamin B5 (pantothenic acid), vitamin B6, folate, vitamin C, vitamin E (alpha-tocopherol), and vitamin K (phylloquinone). The mineral treasures that are stored in it include iron, calcium, phosphorous, magnesium, manganese, zinc, selenium, and potassium. Asparagus contains a very low amount of calories with no cholesterol and is low in sodium as well. Along with this, it is also a rich source of dietary fiber, which is essential for the body. The health benefits of asparagus include good cardiovascular health, healthy pregnancy, improved fertility, relief from pre-menstrual syndrome, and an improved bone health. It helps to treat cancer, diabetes, hangover, cataract, rheumatism, tuberculosis, depression, neurodegenerative diseases, and convulsions. It reduces urinary tract infections and blood cholesterol. It is also good for digestive health.
Keywords: Rutin, flavonoid, Anti-inflammatory properties Hemorrhoids, Bronchitis, Phytoestrogens, α-tocopherol, Glutathione and Homocystein.

INTRODUCTION

Sparagus, scientifically known as *Asparagus officinalis,* belongs to the family of lilies and is valued for its therapeutic properties. It is derived from a Greek word meaning 'sprout' and about 300 different species of this sprout exist all over the world. It is available in white, green, and purple colors. White asparagus is grown away from the sunlight and hence, is deficient of the green pigment, chlorophyll. The purple one is loaded with phytochemicals and anthocyanins which provide the unique color to the vegetable.

The medicinal effect of this plant extends from its root to shoot and its usage has been tested and proven in scientific as well as indigenous systems of medicine like Siddha, Ayurveda, and Unani. Asparagus is a very good source of fiber, folate, vitamins A, C, E and K, as well as chromium, a trace mineral that enhances the

ability of insulin to transport glucose from the bloodstream into cells. This herbaceous plant—along with avocado, kale and Brussels sprouts—is a particularly rich source of glutathione, a detoxifying compound that helps break down carcinogens and other harmful compounds like free radicals. This is why eating asparagus may help protect against and fight certain forms of cancer, such as bone, breast, colon, larynx and lung cancers (Richer et al., 1989).

It's one of the top ranked fruits and vegetables for its ability to neutralize cell-damaging free radicals. This, according to preliminary research, may help slow the aging process. Another anti-aging property of this delicious spring veggie is that it may help our brains fight cognitive decline. Like leafy greens, asparagus delivers folate, which works with vitamin B12—found in fish, poultry, meat and dairy—to help prevent cognitive impairment. In a study from Tufts University, older adults with healthy levels of folate and B12 performed better on a test of response speed and mental flexibility. It contains high levels of the amino acid asparagine, which serves as a natural diuretic, and increased urination not only releases fluid but helps rid the body of excess salts. This is especially beneficial for people who suffer from edema (an accumulation of fluids in the body's tissues) and thosewho have high blood pressure or other heart-related diseases (Mitchell, 1989).

ASPARAGUS NUTRITION FACTS

Asparagus is a great source of vitamins, minerals, and essential proteins. It is rich in vitamin A, vitamin B1 (thiamine), vitamin B2 (riboflavin), vitamin B3 (niacin), vitamin B5 (pantothenic acid), vitamin B6, folate, vitamin C, vitamin E (alpha-tocopherol), and vitamin K (phylloquinone). The mineral treasures that are stored in it include iron, calcium, phosphorous, magnesium, manganese, zinc, selenium, and potassium. Asparagus contains a very low amount of calories with no cholesterol and is low in sodium as well. Along with this, it is also a rich source of dietary fiber, which is essential for the body.

HEALTH BENEFITS OF ASPARAGUS

Let us look at the various health benefits of asparagus in detail below. Asparagus is rich in B vitamins that help in maintaining healthy levels of homocysteine, which is produced in the blood when an amino acid (methionine) breaks down in the body. Vitamin B, especially folate, B6, and B12 play a key role in converting homocysteine into cysteine, which then gets converted back to methionine as per the normal methylation cycle.

A deficiency of vitamin B in the body can elevate the levels of homocysteine and increase the risk of damage to blood vessels, venous thrombosis in which clotting of blood happens in the veins, atherosclerosis, and other cardiac disorders. In addition to this, vitamin B helps in maintaining healthy levels of blood sugar by ensuring proper metabolism of starches and sugars in the body.

The high folate content in asparagus aids in reducing the danger of low birth weight and birth defects during pregnancy. Folate is essential for the growth of the fetus. It also helps in reducing the complication of edema or retention of water in the body tissues owing to its diuretic effect. An asparagus extract can be used effectively for easing pre-menstrual bloating. The presence of essential nutrients helps to combat depression and fatigue, as well as reduce menstrual cramps.

The root of asparagus racemosus is widely appreciated in Ayurvedic therapy and is famously known as Shatavari, which means ‘one who has 100 husbands’. Shatavari has aphrodisiac properties and is used to regulate the hormones and cure male and female sexual disorders. It has anti-anxiety properties and helps in curing physical and mental debility in males.

It also helps in enhancing the libido and boosts sperm count and its motility. In females, asparagus has been proven to be effective in menopausal syndrome and anemia. Shatavari has been trusted as a galactagogue and is also valued for its effectiveness in improving the quality and quantity of the breast milk while boosting the appetite of nursing women. Research studies conducted on animals have demonstrated positive effects on the genitals and the mammary glands of the female subjects who consumed adequate amounts of asparagus.

Asparagus contains significant quantities of the nutrient inulin, which is a kind of complex carbohydrate, commonly known as prebiotic. It does not get digested until it reaches the large intestine, where it is fed upon by a kind of good bacteria like lactobacilli. Inulin aids in the improved absorption of nutrients and the reduced risk of stomach cancer and allergies.

It is also a good provider of dietary fiber and has laxative properties that help in the smooth functioning of the bowels, keeping bloating and constipation at bay. Along with healthy digestion, fiber also helps in lowering the cholesterol levels of the body.

It is widely recommended in Ayurveda therapy for its effectiveness in curing diarrhea, dysentery, and dyspepsia, which is a feeling of abdominal uneasiness including burning sensations or navel pain occurring during or after eating. Studies have shown that asparagus racemosus has been proven to be as effective as the commercially available modern drugs in treating dyspepsia.

Asparagus racemosus, or wild asparagus, contains a certain variety of phytonutrients known as saponins. Studies have demonstrated that the saponins obtained from it possess anti-cancer and anti-inflammatory properties. Along with the chemo-preventive efficiency, it also helps in elevating the levels of glutathione, an antioxidant and detoxifying compound. It also helps in the prevention of many diseases like HIV, AIDS, cystic fibrosis, Alzheimer's disease, anemia, cancer, diabetes, and various cardiac disorders.

The anti-inflammatory nutrients present in asparagus help in reducing the risk of chronic health ailments, including type 2 diabetes. This beneficial effect is also attributed to the presence of the mineral chromium, which plays a vital role in regulating the blood sugar levels of the body. Studies conducted in this regard have shown significant results and have proven that it helps in keeping a check on blood sugar levels, improves insulin secretion, and provides an anti-diabetic effect.

Asparagus extract contains essential amino acids that may prove effective in curing hangovers. A hangover refers to the unpleasant physiological effect caused due to substantial consumption of alcoholic drinks. Its symptoms include anxiety, fatigue, and stomach disorders like nausea, vomiting, and dehydration. Research studies have demonstrated that the leaves and shoots of asparagus contain a good amount of inorganic mineral content, which also aids in the protection of the liver cells from the toxic effects of alcohol (Lison et al., 1980).

Plate 1.

Asparagus is a good source of vitamin A, which is essential for healthy vision. Due to the presence of antioxidants, it helps in defending the retina from the damage caused by the oxygen-free radicals. The presence of the amino acid glutathione in it also helps in reducing the risk of eye ailments such as cataracts and night blindness. Rheumatoid arthritis is a chronic condition that causes inflammation of the joints. Studies have shown that the consumption of folate-rich food like asparagus, which also possesses anti-inflammatory properties, may help to relieve the pain and ease the overall poor functioning in the body associated with arthritis.

Asparagus is also a rich source of rutin, a flavonoid that possesses anti-inflammatory properties and is used to treat hemorrhoids and prevent clotting of blood. It enhances the permeability of capillaries, strengthens the blood vessels, and protects them from becoming fragile. Rutin also prevents the hardening of arteries by reducing the viscosity of blood and helps in easing hypertension, reducing cholesterol, and maintaining cardiovascular health. Asparagus racemosus is also known for its effectiveness in curing bronchitis and tuberculosis. It improves the functioning of lung tissues and helps in treating throat infections as well.

Plate 2.

Plate 3.

Studies have provided evidence that asparagus racemosus is effective in treating neurodegenerative diseases like Alzheimer's, Parkinson's, and Huntington's diseases. These beneficial effects are attributed to the presence of phytoestrogens in it that have certain neuroprotective effects. Neurodegenerative diseases are genetic or periodic conditions affecting the neurons of the human brain and the body does not normally have the ability to replace the damaged neurons. Asparagus is rich in B vitamins that help in maintaining healthy levels of homocysteine, which is produced in the blood when an amino acid (methionine) breaks down in the body. Vitamin B, especially folate, B6, and B12 play a key role in converting homocysteine into cysteine, which then gets converted back to methionine as per the normal methylation cycle.

A deficiency of vitamin B in the body can elevate the levels of homocysteine and increase the risk of damage to blood vessels, venous thrombosis in which clotting of blood happens in the veins, atherosclerosis, and other cardiac disorders. In addition to this, vitamin B helps in maintaining healthy levels of blood sugar by ensuring proper metabolism of starches and sugars in the body. The high folate content in asparagus aids in reducing the danger of low birth weight and birth defects during pregnancy. Folate is essential for the growth of the fetus. It also helps in reducing the complication of edema or retention of water in the body tissues owing to its diuretic effect (White, 1975).

An asparagus extract can be used effectively for easing pre-menstrual bloating. The presence of essential nutrients helps to combat depression and fatigue, as well as reduce menstrual cramps. It also helps in controlling blood loss and maintaining hormonal balance during menstruation. The root of asparagus racemosus is widely appreciated in Ayurvedic therapy and is famously known as Shatavari, which means 'one who has 100 husbands'. Shatavari has aphrodisiac properties and is used to regulate the hormones and cure male and female sexual disorders. It has anti-anxiety properties and helps in curing physical and mental debility in males. It also helps in enhancing the libido and boosts sperm count and its motility. In females, asparagus has been proven to be effective in menopausal syndrome and anemia. Shatavari has been trusted as a galactagogue and is also valued for its effectiveness in improving the quality and quantity of the breast milk while boosting the appetite of nursing women. Research studies conducted on animals have demonstrated positive effects on the genitals and the mammary glands of the female subjects who consumed adequate amounts of asparagus.

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Epilepsy is a chronic disorder that affects the brain and leads to recurrent convulsions or seizures. The brain transmits abnormal signals as a result of irreversible changes in the brain tissues. The roots of asparagus racemosus can be used as an anti-epileptic for curing the symptoms of epilepsy. Research studies show that asparagus racemosus possess anti-urolithiatic effect, which helps to cure urinary tract infections. Due to the vegetable's diuretic properties, consumption of asparagus increases the frequency and volume of urination. This helps to detoxify and flush the toxic waste out of the body. According to research, the anti urolithiatic effect can be attributed to the presence of antioxidants and essential vitamins C and E.

It is also known to give a peculiar, pungent smell to the urine, which is completely normal. This is because asparagus breaks down its constituents of ammonia and sulfur into volatile chemical compounds that actually help the body to detoxify. Epilepsy is a chronic disorder that affects the brain and leads to recurrent convulsions or seizures. The brain transmits abnormal signals as a result of irreversible changes in the brain tissues. The roots of asparagus racemosus can be used as an anti-epileptic for curing the symptoms of epilepsy. Research studies show that asparagus racemosus possess anti-urolithiatic effect, which helps to cure urinary tract infections. Due to the vegetable's diuretic properties, consumption of asparagus increases the frequency and volume of urination.

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CULINARY USES OF ASPARAGUS

Asparagus has a delicate flavor and can be eaten raw, grilled or roasted. It can be added as an ingredient to pickles, salad recipes, and soups. The shoots of this plant are relished as an appetizer and are prepared in different ways around the world. It requires minimal cooking, which gave birth to a famous Roman saying, "As quick as cooking asparagus", for anything that has to be done quickly.

CONCLUSION

Asparagus is a nutrient-dense food that is high in folic acid and is also a good source of potassium, fiber, vitamin B6, vitamins A and vitamin C, and thiamine. Extensive research into asparagus nutrition has resulted in this funny-looking vegetable being ranked among the top fruits and vegetables for its ability to reduce the effect of cell-damaging free radicals. Packed with antioxidant and anti-inflammatory properties, asparagus has been used as a medicinal vegetable for 2,500 years. The list of asparagus nutritional benefits is long, for it helps your heart, digestion, bones and even cells. Asparagus nutrition is impressive because it contains virtually no fat and remains very low in calories, with only 20 calories for five spears, yet asparagus is packed with vitamins and minerals. Otherwise, it contains two grams of protein, only four grams of carbohydrates and zero sodium**.** A surprising aspect about asparagus nutrition is that it's rich in glutathione, a detoxifying compound that can help destroy carcinogens. Researchers believe glutathione is so pivotal to our health that the levels in our cells are becoming a predictor of how long we will live. The fiber in asparagus helps to improve digestion because it moves food through the gut. One serving of asparagus contains more than a gram of soluble fiber, which has been shown to lower our risk of heart disease. Soluble fiber dissolves in our bodies into a gluey mass that works to trap fat, sugars, bacteria and toxins, and move them out of the body. Because soluble fiber attracts water and turns to gel during digestion, it slows our digestion. Fiber also releases organic acids in the body that provide us fuel, cleanse the digestive tract, help the liver to function, and rid our bodies of toxins, pathogens, added cholesterol and extra sugar. Dietary fiber intake provides many health benefits, but sadly the average fiber intakes for US children and adults are less than half of the recommended levels.

Individuals with high intakes of dietary fiber appear to be at significantly lower risk for developing coronary heart disease, stroke, hypertension, diabetes, obesity and certain gastrointestinal diseases. Increasing fiber intake lowers blood pressure and serum cholesterol levels. Like most of the B-vitamins, thiamine plays a role in how our bodies use energy from food and is vital for cellular function. Thiamine specifically helps the body convert carbohydrates to energy, which is important for metabolism, focus and strength. B vitamins play a key role in the metabolism of sugars and starches, so they are critical for blood sugar management. B vitamins also play a key role in regulating homocysteine, which is an amino acid that can lead to heart disease if it reaches excessive levels in our blood. This makes asparagus a great option for heart health, too. One study showed that older adults with healthy levels of vitamin B12 performed better on a test that measured speed and mental flexibility. Vitamin B is commonly known as the "energy vitamin" because it can definitely improve your energy and help you overcome fatigue and exhaustion. It improves energy by supporting thyroid function and cellular methylation.

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Corresponding author: Dr. Raaz K. Maheshwari, Department of Chemistry, SBRM Govt. P.G. College, Nagaur, Rajasthan, India
Email: rkmgreenchem.jaipur@gmail.com

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