

## APPLICATIONS

- Antioxidant Support
- Detox Support
- Liver Detox Support
- Kidney Detox Support
- Intestinal Detox Support



## INTRODUCTION

*Sparga* is a hydro-ethanol extract from the stems of *Asparagus officinalis*, which is also consumed as a garden vegetable. Asparagus has a long history of use, dating back at least as far as ancient Egypt, Greece, and Rome, where it was used for food and medicine.<sup>1</sup> Both Dioscorides and Pliny the Elder discussed the cultivation and preparation of asparagus for food in the 1<sup>st</sup> century CE.<sup>2</sup> In the 17<sup>th</sup> century, asparagus was re-established as a culinary delicacy by Louis XIV, the Sun King, who is credited for its nickname as the “King of Vegetables.”<sup>1,3</sup>

The word asparagus comes from the Greek *asparagos*, meaning shoot or sprout.<sup>4</sup> There are almost 300 species of asparagus, worldwide.<sup>4</sup> *A. officinalis* is native to parts of Africa, Asia, Australia, and Europe.<sup>4</sup> It belongs to the Asparagaceae family, though was considered part of the Liliaceae family prior to the recent subdivision.<sup>4</sup> *A. officinalis* is also known as *A. longifolius* and Sparrow Grass.<sup>5</sup>

The macronutrient content of *A. officinalis* primarily includes carbohydrate, along with protein, dietary fiber, and a small amount of fat.<sup>4</sup> The micronutrient content includes minerals such as potassium (202 mg per 100 g serving), phosphorus, calcium, magnesium, selenium, iron, sodium, zinc, and copper; fat-soluble vitamins such as K, A, and provitamin A carotenoids; water-soluble B vitamins such as folate (52 mcg per 100 g serving), choline, thiamin (B1), riboflavin (B2), niacin (B3), and pyridoxine (B6); and the water-soluble vitamin C.<sup>6</sup> Asparagus also contains amino acids, predominantly aspartic acid and glutamic acid.<sup>7</sup>

*A. officinalis* also contains steroidal saponins, flavonoids, alkaloids, fructo-oligosaccharides, steroidal glycosides, tannins, sulfur compounds, nitrogen compounds, and acetylenic compounds.<sup>4,8</sup> Specific constituents found in *A. officinalis* include inulin, asparagusic acid, aldehyde, thiophene, thiazole, ketone vanillin, asparoffins A-D, asparenyol, 1-methoxy-2-hydroxy-4-[5-(4-hydroxyphenoxy)-3-penten-1-ynyl] phenolglucosin B, and asparanin A, as well as the sulfur

compounds glutathione, N-acetylcysteine, and cysteine.<sup>4,8,9</sup>

*Sparga* is made at our U.S. manufacturing facility. Because our extracts are made in our own facility, we control all aspects of quality, including stringent ID testing, microbial testing, and heavy metal testing. NutraMedix rigorously follows current good manufacturing practices (cGMP), as do our suppliers.

## ANTIOXIDANT SUPPORT

*A. officinalis* may help to support antioxidant activity per ABTS<sup>+</sup> and DPPH<sup>•</sup> superoxide dismutase and erythrocyte hemolysis;<sup>10</sup> and FRAP and CUPRAC assays.<sup>11</sup> Antioxidant support has been attributed to the constituent polyphenols, flavanols, flavonoids, tannins and ascorbic acid.<sup>11</sup> When consumed as a vegetable, boiling may decrease flavonol content by as much as 43%.<sup>12</sup> According to HPLC-MS/MS analysis, specific constituents relevant to antioxidant support include phenolic acid, quercetin-3-rutinoside, quercetin, isorhamnetin, and kaempferol.<sup>13</sup> In mice, ethanol and aqueous extracts of *A. officinalis* helped to maintain healthy levels of superoxide dismutase (SOD) and total antioxidant capacity (TAC) already within the normal range.<sup>13</sup> While there are currently no human studies with asparagus and antioxidant support, a human study with broccoli sprouts, also containing glutathione, helped to maintain total antioxidant capacity (TAC), oxidative stress index (OSI), and malondialdehyde (MDA) levels already within the normal range.<sup>14</sup>

## DETOX SUPPORT

The primary systems involved in detoxification are the liver, kidneys, and intestines. *A. officinalis* may help with healthy detoxification through antioxidant support for the liver and kidneys. When consumed as a vegetable with dietary fiber, *A. officinalis* may help to maintain healthy bile acid binding for normal intestinal excretion.\*

Glutathione is an important endogenous antioxidant for healthy detoxification and may be supported through dietary and supplemental means.\* In a study examining the glutathione content of sulfur-rich vegetables and fruits, asparagus contained the highest amount of glutathione, followed by avocado and spinach. Asparagus also contained the highest amount of N-acetylcysteine (NAC) and significant levels of cysteine, second only to red pepper.<sup>9</sup> NAC and cysteine are glutathione precursors, with cysteine availability as the rate-limiting step in endogenous glutathione production.<sup>15</sup> Glutathione helps with antioxidant support, helps to maintain normal detoxification, and helps to support the normal excretion of the body's natural toxins.<sup>16,17</sup>

## LIVER DETOX SUPPORT

*A. officinalis* may help with liver detox through antioxidant support.\* Its constituent antioxidant glutathione is essential for healthy liver detoxification.<sup>15</sup> Glutathione may contribute direct antioxidant support or act as a cofactor for antioxidant enzymes.\* It may support antioxidant activity for free radicals resulting from Phase 1 liver detoxification, and in Phase 2 liver detoxification, may support the conjugation of Phase 1 intermediates to a water-soluble form for urinary excretion.<sup>15</sup>

*A. officinalis* may support normal ethanol metabolism and help to maintain alcohol dehydrogenase and aldehyde dehydrogenase already within the normal range.\* Consequently, it may help to support hepatocyte health.<sup>18</sup> In mice, both ethanol and aqueous extracts of *A. officinalis* helped to support liver health by maintaining serum levels of alanine transaminase (ALT) and aspartate transaminase (AST) already within the normal range.<sup>13</sup> In rats, *A. officinalis* extract helped to support healthy hepatocytes and maintain levels of AST, ALT, ALP and bilirubin already within the normal range.<sup>19</sup>

## KIDNEY DETOX SUPPORT

*A. officinalis* may help with kidney detox support through glutathione antioxidant support.\* In Phase 2 liver detoxification, the constituent glutathione supports the conjugation of Phase 1 intermediates, rendering them water soluble and available for renal excretion.<sup>15</sup> In rats, *A. officinalis* extract helped to support healthy glomeruli, maintaining levels of urea and creatinine already within the normal range.<sup>19</sup>

# INTESTINAL DETOX SUPPORT

When consumed as a vegetable, the dietary fiber in *A. officinalis* may help with intestinal detox support through the binding of bile acids.<sup>\*20,21</sup> Steaming (vs. boiling) supports bile acid binding ability, which may help to maintain healthy excretion through stool.<sup>\*20,21</sup>

## SAFETY AND CAUTIONS

Asparagus is widely considered safe in amounts found in foods. In some individuals, asparagus can contribute a distinctive odor to the urine, though not all individuals experience this, nor do all individuals perceive this when it occurs.<sup>2</sup> Some individuals have had allergic reactions to asparagus, both orally and topically, and caution should be used in those with allergies to onions, garlic, and similar members of the Liliaceae family due to the potential for cross-allergenicity.<sup>5</sup> In one small study with a product containing asparagus root and parsley, side effects included gastrointestinal complaints such as nausea, abdominal pain and constipation, as well as kidney pain (15% of patients), gout (2% of patients), and dysuria. It is unknown whether these side effects were due to asparagus root, parsley, or both.<sup>5</sup> It should be noted that NutraMedix Sparga is extracted from asparagus stems, not asparagus root.

In a mouse study with NutraMedix Sparga, performed at the Universidad de Guayaquil in Ecuador, no adverse effects were noted with administration of *A. officinalis* extract at approximately 626 times the human dose, daily, over a 14-day period. Researchers concluded that according to OECD TG 423 guidelines, the product is considered innocuous for humans.<sup>22</sup>

Asparagus should be avoided in pregnancy as a related species, *A. pubescens*, has been shown to have contraceptive effects in mice, rats, and rabbits, inhibiting fetal implantation.<sup>5,23</sup> Asparagus may have additive effects with potassium-wasting diuretic medications such as furosemide/Lasix and hydrochlorothiazide (HCTZ), potentially increasing the risk of hypokalemia. When taken with lithium, asparagus may decrease lithium excretion, resulting in elevated lithium levels.<sup>5</sup>

Safety not documented in breastfeeding or pregnant women, or in children under 3 years of age due to insufficient safety research.

**\* This statement has not been evaluated by the Food and Drug Administration. This product is not intended to treat, cure, or prevent any diseases.**



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