Scientific Name

Brassica oleracea, Brassica oleracea var. acephala.

Family: Brassicaceae/Cruciferae.

People Use This For

Orally, Brassica oleracea var. acephala is used for gastritis, gastric and duodenal ulcers, gastric pain, gastric hyperacidity, and Roemheld syndrome. Brassica oleracea var. acephala is used orally to treat asthma, morning sickness, and prevent osteoporosis. It is also used orally to prevent lung cancer, stomach cancer, colorectal cancer, breast cancer, and other cancers.

Topically, Brassica oleracea var. acephala leaves and Brassica oleracea var. acephala leaf extracts are used to relieve swelling and to reduce breast engorgement.

Safety

LIKELY SAFE ...when used orally in amounts commonly found in foods. ...when used topically and appropriately, short-term. Significant side effects have not been reported in short-term studies.

POSSIBLY SAFE ...when used orally and appropriately in medicinal amounts.

PREGNANCY: There is insufficient reliable information available about using Brassica oleracea var. acephala in medicinal amounts during pregnancy; avoid using.

LACTATION: **LIKELY SAFE** ...when used topically and appropriately, short-term. Significant adverse effects have not been reported in short-term studies. **POSSIBLY UNSAFE** ...when used orally in amounts commonly found in foods. There is some evidence that exclusively breast-fed infants develop colic if mothers consume Brassica oleracea var. acephala as little as once per week.

Effectiveness

POSSIBLY EFFECTIVE

Treatment of AMD due to high content of Lutein and Zeaxanthin (2) together with its high content of vitamins and minerals. All relatively close to the composition found in AREDS II.

INSUFFICIENT RELIABLE EVIDENCE to RATE

Bladder cancer. Epidemiologic research shows that eating about 1.75 cups of cruciferous vegetables such as Brassica oleracea var. acephala or broccoli decreases the risk of developing bladder cancer by about 30% in men and women. (21)

Colorectal cancer. There is some evidence that people who consume large amounts of Brassica oleracea var. acephala have a lower risk of developing colorectal cancer. (30)

Gastric cancer. There is some evidence that people who consume large amounts of Brassica oleracea var. acephala have a lower risk of developing stomach cancer. (30)

Hyperlipidemia. Preliminary clinical evidence suggests that adding Brassica oleracea var. acephala to a beverage consisting of fruits and vegetables for 3-9 weeks may reduce low-density lipoprotein cholesterol levels in patients with hyperlipidemia. (28)

Lung cancer. There is some evidence that people who consume large amounts of Brassica oleracea var. acephala have a lower risk of developing lung cancer. (30)

Pancreatic cancer. There is some evidence that elderly and middle-aged people who consume one or more servings of Brassica oleracea var. acephala per week have a lower risk of developing pancreatic cancer compared to those who do not eat Brassica oleracea var. acephala. (27)

Prostate cancer. There is some evidence that people who consume higher amounts of Brassica oleracea var. acephala and other Brassica vegetables such as kale, broccoli, and cauliflower do not have a lower risk of prostate cancer. However, other evidence suggests that people who consume higher amounts of Brassica oleracea var. acephala and other Brassica vegetables have a lower risk of developing prostate cancer. (22, 23, 24, 25)

More evidence is needed to rate Brassica oleracea var. acephala for these uses.

Dosing & Administration

ORAL: Brassica oleracea var. acephala is typically chopped and pressed for its juice. For augmenting the diet, 1 liter of juice has been consumed daily. For gastric pain and hyperacidity, people typically use 1 teaspoon of the juice 3 times daily before meals (18).

Adverse Effects
None reported.

Interactions with Drugs

ACETAMINOPHEN (Tylenol, others)
Interaction Rating = Moderate. Be cautious with this combination.
Severity = Mild • Occurrence = Probable • Level of Evidence = **B**

Brassica oleracea var. acephala can increase metabolism and decrease levels of acetaminophen. In clinical research, a diet that includes daily consumption of Brassica oleracea var. acephala and Brussels sprouts decreases acetaminophen levels by as much as 16%. Brassica oleracea var. acephala seems to boost elimination through glucuronide conjugation. (1)

ANTIDIABETES DRUGS
Interaction Rating = Moderate. Be cautious with this combination.
Severity = Moderate • Occurrence = Possible • Level of Evidence = **D**

Some evidence from animal and in vivo research suggests that Brassica oleracea var. acephala might have hypoglycemic effects (29). Theoretically, concomitant use with antidiabetic agents might result in additive effects; use with caution. Dose adjustments to diabetes medications might be necessary. Some antidiabetes drugs include glimepiride (Amaryl), glyburide (DiaBeta, Glynase PresTab, Micronase), insulin, metformin (Glucophage), pioglitazone (Actos), rosiglitazone (Avandia), and others.

CYTOCHROME P450 1A2 (CYP1A2) SUBSTRATES
Interaction Rating = Moderate. Be cautious with this combination.
Severity = Moderate • Occurrence = Possible • Level of Evidence = **D**

There is some concern that Brassica oleracea var. acephala might decrease the effectiveness of numerous drugs. Brassica oleracea var. acephala might increase drug metabolism and elimination by stimulating cytochrome P450 1A2 (CYP1A2) activity. Some drugs metabolized by CYP1A2 include clozapine (Clozaril), cyclobenzaprine (Flexeril), fluvoxamine (Luvox), haloperidol (Haldol), imipramine (Tofranil), mexiletine (Mexitil), olanzapine (Zyprexa), pentazocine (Talwin), propranolol (Inderal), tacrine (Cognex), theophylline, zileuton (Zyflo), zolmitriptan (Zomig), and others.

GLUCURONIDATED DRUGS
Interaction Rating = Moderate. Be cautious with this combination.
Severity = Moderate • Occurrence = Probable • Level of Evidence = **B**

Brassica oleracea var. acephala seems to boost elimination through glucuronide conjugation. (1) Theoretically, Brassica oleracea var. acephala might also lower levels of other drugs that are metabolized through glucuronide conjugation including acetaminophen (Tylenol, others) and oxazepam (Serax), haloperidol (Haldol), lamotrigine (Lamictal), morphine (MS Contin, Roxanol), zidovudine (AZT, Retrovir), and others.

OXAZEPAM (Serax)
Interaction Rating = Moderate. Be cautious with this combination.
Severity = Moderate • Occurrence = Probable • Level of Evidence = **B**

Brassica oleracea var. acephala can increase metabolism and decrease levels of oxazepam. A diet that includes daily consumption of Brassica oleracea var. acephala and brussels sprouts decreases oxazepam levels by as much as 17%. Brassica oleracea var. acephala seems to boost elimination through glucuronide conjugation. Theoretically, Brassica oleracea var. acephala might also lower levels of other drugs that are metabolized through glucuronide conjugation including acetaminophen (Tylenol, others) and oxazepam (Serax), haloperidol (Haldol), lamotrigine (Lamictal), morphine (MS Contin, Roxanol), zidovudine (AZT, Retrovir), and others.

WARFARIN (Coumadin)
Interaction Rating = Moderate. Be cautious with this combination.
Severity = High • Occurrence = Possible • Level of Evidence = **D**

If consumed in large quantities, Brassica oleracea var. acephala might decrease the anticoagulant effects of warfarin due to its high vitamin K content.

Interactions with Herbs & Supplements

HERBS AND SUPPLEMENTS WITH HYPOGLYCEMIC POTENTIAL: Some evidence from animal and in vivo research suggests that Brassica oleracea var. acephala might have hypoglycemic effects (25424). Theoretically, Brassica oleracea var. acephala might have additive effects with other herbs that decrease blood glucose levels and may increase the risk of hypoglycemia

Interactions with Foods

None known.

Interactions with Lab Tests

INTERNATIONAL NORMALIZED RATIO (INR)/PROTHROMBIN TIME (PT): Theoretically, Brassica oleracea var. acephala might decrease coagulation test results due to high vitamin K content.

THYROID STIMULATING HORMONE (TSH): Ingesting large quantities of Brassica oleracea var. acephala juice might elevate TSH test results.

Interactions with Diseases

DIABETES: Brassica oleracea var. acephala might decrease blood glucose levels (29). Theoretically, Brassica oleracea var. acephala may affect glucose control in patients with diabetes. Monitor blood glucose levels closely.

HYPOTHYROIDISM: There is some concern that Brassica oleracea var. acephala might worsen hypothyroidism. Brassica oleracea var. acephala constituents have antithyroid properties and there is some evidence that Brassica oleracea var. acephala can boost TSH levels; avoid using.

SURGERY: Brassica oleracea var. acephala might affect blood glucose levels. Theoretically, Brassica oleracea var. acephala might interfere with blood glucose control during and after surgical procedures. Tell patients to discontinue Brassica oleracea var. acephala at least 2 weeks before elective surgical procedures.

Mechanism of Action

The applicable part of Brassica oleracea var. acephala is the leaf. Brassica oleracea var. acephala, like other dark leafy vegetables, contains high amounts of vitamin K1 (20). Brassica oleracea var. acephala contains modest amounts of calcium, vitamin C, vitamin A, vitamin E, and several B vitamins. Brassica oleracea var. acephala also contains other active constituents including chlorogenic acid, caffeic acid, and goitrin. These constituents seem to have antithyroid effects, possibly by inhibiting iodine uptake (12). There is some interest in Brassica oleracea var. acephala for breast cancer prevention because it contains constituents called glucosinolates such as indole-3-carbinol. Indole-3-carbinol is released from Brassica oleracea var. acephala when it is chewed and is thought to change how estrogen is metabolized. Estrogen can be converted to either 16-alpha-hydroxyestrone or 2-alpha-hydroxyestrone. The 16-alpha-hydroxyestrone metabolite is thought to have a role in developing cancer. The 2-alpha-hydroxyestrone seems to protect against breast cancer. Indole-3-carbinol induces cytochrome P450 1A1 (CYP1A1) and 1A2 (CYP1A2), which shifts metabolism away from 16-alpha-hydroxyestrone in favor of 2-alpha-hydroxyestrone. This means that indole-3-carbinol might boost levels of a protective estrogen metabolite and decrease levels of a harmful one. Indole-3-carbinol and other glucosinolates, including S-methyl cysteine sulfoxide, might also have anticarcinogenic properties. These constituents seem to inhibit the enzymatic transformation of pro-mutagens (11).

Isothiocyanates from Brassica oleracea var. acephala are quickly conjugated with glutathione and then metabolized to N-acetylcysteine compounds which are eliminated in the urine. N-acetyl compounds are believed to have anti-cancer effects and help reduce the risk of bladder cancer.

Brassica oleracea var. acephala also has antioxidant effects. (4, 5, 7)

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