

# What are antioxidants?

Antioxidants are compounds that neutralize free radicals, unstable and reactive molecules that are missing at least one electron in their chemical structure. When the ratio of antioxidants to free radicals in the body is unfavorable, it can lead to oxidative stress. Under oxidative stress, free radicals react with the body's cells, producing additional free radical molecules and contributing to cell damage and disease, such as cardiovascular disease and cancer.








# Health benefits of antioxidants

- Anti-cancer (e.g., inhibits tumor growth)
- Anti-inflammatory
- Cardioprotective (e.g., atherosclerosis, cardiovascular diseases)
- Protective against age-related conditions (e.g., Alzheimer's disease, Parkinson's disease, macular degeneration, cataracts)

## Common types of antioxidants



Antioxidant	Subgroups/ alternative name	Primary benefits	Dietary sources	Recommended dietary allowance (RDA) for adults
<b>Bioflavonoids</b> 	Flavonoids, flavanols, flavones, catechins, anthocyanins	Cardioprotective, protective against age-related neurological conditions	Apples, berries, black tea, coffee, garlic, onions	N/A
<b>Carotenoids</b> 	Alpha-carotene, beta-carotene, lutein, lycopene, zeaxanthin	Protective against age-related eye and neurological conditions	Bell peppers, carrots, lobster, oranges, salmon, shrimp, yams	N/A
<b>Terpenoids</b> 	Isoprenoids, terpenes	Anti-cancer, cardioprotective	Cauliflower, coconut, garlic, onions, whole grains	N/A
<b>Vitamin C</b> 	Ascorbic acid, ascorbate	Anti-cancer, cardioprotective, protective against age-related eye conditions	Berries, bell peppers, Brussels sprouts, citrus fruits, kiwi	Females: 75 mg/day Males: 90 mg/day Smokers: Additional 35 mg/day
<b>Vitamin E</b> 	Tocopherols, tocotrienols	Cardioprotective, protective against age-related eye conditions	Green leafy vegetables, nuts, seeds, vegetable oils	Males and females: 15 mg/day



## **Antioxidant supplements**

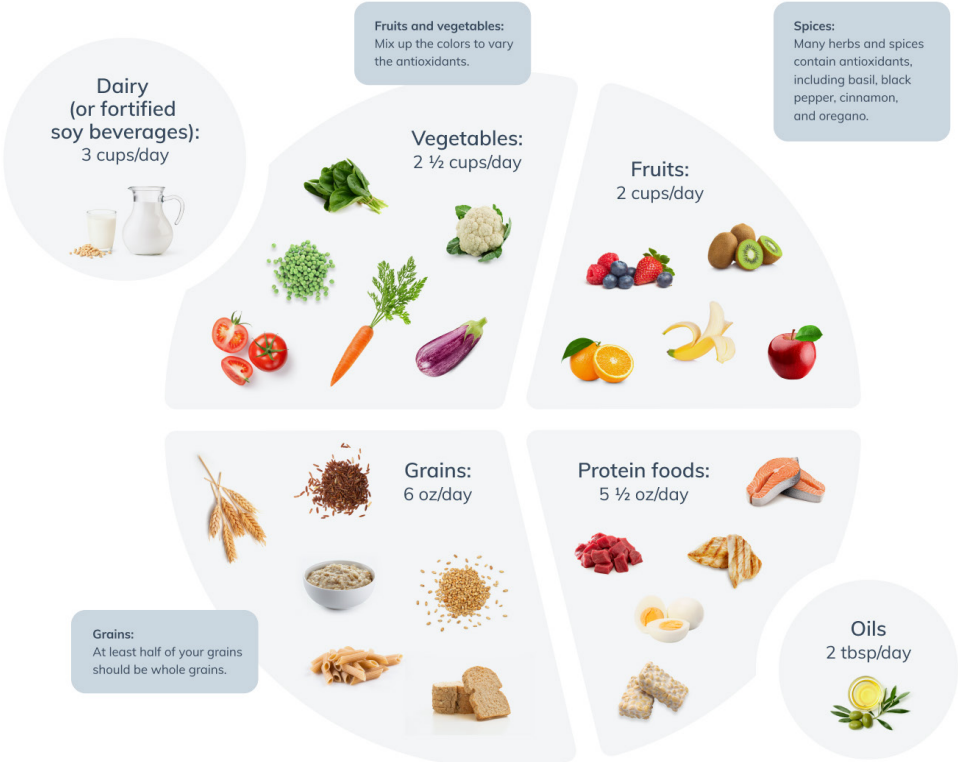
Antioxidant supplements may help address oxidative stress; however, supportive evidence remains inconsistent. Antioxidants are best consumed through a balanced diet that incorporates a variety of fresh fruits and vegetables.

If you're considering an antioxidant supplement, be sure to check with your integrative practitioner first, as certain antioxidants have the potential to interact with medications and can be toxic in high doses.

## **What is an antioxidant-rich diet?**

Eating a balanced diet that incorporates a variety of plant foods, such as fruits, vegetables, and legumes, is the best way to incorporate antioxidant-rich foods into your routine. Plant foods are especially good sources of antioxidants as they contain phytonutrients, a group of plant-based chemical compounds with antioxidant properties. Based on the Dietary Guidelines for Americans, the following image provides an overview of foods and servings sizes to include in a balanced diet.

# Antioxidant-rich diet





## References

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This handout was developed and medically reviewed by Fullscript's Integrative Medical Advisory team.

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