



## NUTRITION CONNECTION

# SUPERCHARGE YOUR MENU WITH FUNCTIONAL FOODS

BY CHRISSY CARROLL, MPH, RD

**WHETHER YOU'RE WORKING IN LONG-TERM CARE,** school food service, or a hospital kitchen, boosting the nutritional quality of meals is a smart choice. One way to do so? Add more functional foods to the menu!

### WHAT ARE FUNCTIONAL FOODS?

In the United States, there is no legal definition for functional foods. However, many experts have proposed a simple description: foods that provide additional health benefits beyond basic nutrition.

Functional foods may offer high amounts of certain nutrients, phytochemicals, or other compounds that have health-promoting roles—like supporting heart health or reducing the risk of cognitive decline. Sometimes the food naturally contains those compounds, and other times manufacturers may formulate a functional food by adding specific ingredients.

Here are eight examples of functional foods to consider adding to your menu:

#### 1. Yogurt and kefir

In addition to nutrients like calcium and protein, these dairy products also contain probiotics – live cultures of good bacteria that support the gut microbiome. Research suggests probiotics (when consumed in high enough amounts) may support immune health, reduce symptoms in certain inflammatory conditions, and play a role in chronic disease prevention.

Ways to include them:

- Add packaged yogurt cups to breakfast or use as an easy dessert.

- Provide DIY parfait stations, where kids and adults alike can add their own toppings like berries, chocolate chips, granola, and more.
- Add yogurt or kefir to smoothies at breakfast or snacks.
- Use yogurt as the base for ranch-flavored veggie dips or creamy salad dressings.
- Top oatmeal with a scoop of yogurt (great for adding more creaminess, protein, and probiotics).

#### 2. Fermented vegetables

While yogurt is one of the most common sources of probiotics, some people don't consume dairy due to intolerances, allergies, or plant-based dietary patterns. Fermented vegetables are another functional food rich in probiotics, are easy to add to a variety of meals, and are acceptable for those who don't consume dairy.

Vegetables must actually be fermented to include probiotics. Shelf-stable pickles or sauerkraut are typically pickled with vinegar rather than traditional fermentation, and thus don't have the probiotic benefit. Traditional fermentation is done using just the vegetable(s), water, salt, and any additional seasonings, and will typically be refrigerated at purchase.

Keep in mind that fermented vegetables may be high in sodium, and sometimes the tangy flavor can be a bit of a surprise. If you're just starting to add these to the menu, consider using them as optional toppings or sides to start, rather than immediately mixing them into a dish.

Ways to include them:

- Offer fermented sauerkraut and kimchi as toppings for hot dogs and sandwiches.



- Serve fermented pickle spears as a side dish with sandwiches or burgers.
- Add kimchi or other fermented veggies as a topping on fried rice or stir fry.
- Toss traditionally fermented vegetables into a cold pasta salad or on top of a traditional green salad.

### 3. Olive oil

You probably know that olive oil is rich in monounsaturated fats (those “good fats” that support cardiovascular health) – but have you ever heard of oleocanthal? This phenolic compound in olive oil is responsible for that slight throat tingling sensation you may have experienced if you’ve ever done an olive oil tasting. It has also been linked to several health benefits.

Oleocanthal suppresses the activity of certain enzymes that produce pro-inflammatory compounds. In fact, when consumed in adequate amounts,




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it acts similarly (but far milder) to non-steroidal anti-inflammatory drugs (NSAIDs). In addition, it acts as an antioxidant in the body. Both functions may contribute to reducing inflammation, which is associated with several chronic conditions.

Authors of a 2023 review article in *Antioxidants* note: “The consumption of consistent, low-level doses of oleocanthal, alongside other phenolic compounds present in extra virgin olive oil, in alignment with the Mediterranean dietary tradition, has the potential to gradually dampen the body’s inflammatory reactions. This long-term moderation of inflammation may ultimately lead to substantial decreases in the risk of developing chronic inflammatory conditions, including cancer.”

Note that the amount of oleocanthal can vary between different regions and types of olives. Extra virgin olive



  
**BETA GLUCAN,**  
a soluble fiber found in oats,  
is linked to a reduction in  
total cholesterol and LDL  
cholesterol.

oil from Italy typically has a higher concentration of oleocanthal than that of the United States.

Ways to include it:

- Use extra virgin olive oil when sautéing or roasting vegetables.
- Combine olive oil with other ingredients to make homemade dressings for salads or marinades for meat.
- Substitute olive oil in place of butter in baked goods like muffins or quick breads. Some recipes may need slight adjustments when using this substitution.
- Drizzle a little high quality olive oil over ice cream for dessert. It's surprisingly delicious, and a unique way to increase calorie intake.

#### 4. Foods with added plant sterols and stanols

Plant sterols and stanols are compounds that compete with cholesterol for absorption in the intestines. Research suggests consuming them regularly can reduce LDL cholesterol (the “bad” cholesterol) by around 5 to 15 percent. However, there is interindividual variation, as some people respond to consumption, and others don't.

Plant sterols and stanols occur naturally in many foods like whole grains, fruits, vegetables, legumes, nuts, seeds, and plant oils. However, you need around 2 grams per day to elicit a clinically significant effect. You're unlikely to meet that using only naturally-occurring sources, but it is achievable using fortified foods. These foods can be pricey, but may be worthwhile if you're working in a setting where

cholesterol reduction is a goal.

Ways to include them (note that “fortified” below refers to foods that have added plant sterols and/or stanols):

- Fortified margarines are one of the most common products on the market, and can be used as an alternative to butter on toast, bagels, and English muffins. While margarines initially landed a bad reputation due to their use of partially hydrogenated oils, many products have reformulated without these.

- Add fortified bars as a snack option for clients.
- Look for fortified granola that can be sprinkled onto yogurt.
- Try fortified oatmeal packets or pancake mixes for a nutritious breakfast option.

#### 5. Oats

Oats make the list of functional foods thanks to a specific type of fiber called beta glucan. This soluble fiber is linked to a reduction in total cholesterol and LDL cholesterol. Research notes this relationship holds true for both oats as a whole food, as well as beta glucan as an isolated functional ingredient.

Soluble fiber has long been known to impact cholesterol by reducing its absorption from the intestines into the bloodstream. Newer research suggests the fiber and/or polyphenols in oats may also impact cholesterol, partially due to modulating the amounts and actions of gut bacteria. Interestingly, this impact on the microbiome may also support immune health.

Ways to include them:

- Oatmeal – whether served hot in traditional preparation, or cold a la overnight oats – is a cost-effective breakfast option in any setting. Because of its relatively neutral flavor, you can serve it with different add-ins and ingredient combinations that reduce the risk of flavor fatigue.

- Desserts like fruit crisps can include an oat-based topping.
- Use oatmeal as a canvas for building in more nutrition for someone struggling to meet their needs. For example, dried milk powder, whey protein powder, or egg whites can be added to oats while cooking to boost the protein content. Nut butters or regular butter can be swirled in to increase calories.
- Process oats into a fine powder in a blender or food processor, then use them as flour to make muffins, pancakes, and other baked goods.

## 6. Beets

Beets deserve a spot on the list of functional foods thanks to two unique properties: their rich concentration of dietary nitrates and high amounts of phytochemicals, including betalains.

Dietary nitrates in beets are eventually converted to nitric oxide in the body, which helps dilate the blood vessels. This can reduce blood pressure, which has been noted in several studies. Some research suggests other components (like phytochemicals) in beets may also play a role in blood pressure reduction through different pathways. These benefits may be affected by age, gender, baseline blood pressure, and medication use.

To achieve the beneficial effect on blood pressure, studies generally aim for 300 to 500 mg of dietary nitrates. A whole beet contains around 120 mg of dietary nitrates, but the specific amount varies based on the cultivar. Beet juice may be an easier way to achieve a clinically significant dosage.

Betalains, the primary phytochemical in beets, are also health-promoting compounds. They may reduce oxidative stress and prevent DNA damage in the body's cells, which could have disease prevention implications.

Ways to include them:

- Blend beet juice with sweet fruits (like mango or pineapple) to make smoothies or popsicles.
- Offer beet juice as a standalone juice option to enjoy with meals.
- Add shredded beets to a salad or coleslaw recipe.
- Roast beets with olive oil and seasonings as a side dish.

## 7. Berries

Strawberries, raspberries, blackberries, blueberries, cranberries...these

Ways to include them:

- Include berries in desserts, like fruit crisps, yogurt parfaits, or freshly made sorbet.
- Add berries as mix-ins or toppings for breakfast items like pancakes, muffins, oatmeal, and waffles.
- Top leafy green salads and grain bowls with berries, offering a sweet complement to savory and bitter flavors.
- Add berries to smoothies and milkshakes, or freeze these blended drinks into popsicles.

## 8. Seafood

Seafood is rich in protein, omega-3 fatty acids, and various vitamins and minerals. Several studies have noted that seafood intake offers possible benefits above and beyond basic nutrition, likely due to the concentration of omega-3 fats.

The strongest evidence exists for seafood intake and cognitive development during pregnancy and early childhood. A USDA review found moderate evidence supports the connection between seafood intake during pregnancy and measures of cognitive development in young children. Another systematic review concluded that eating at least 4 ounces of seafood per week during childhood had beneficial associations with neurocognitive outcomes.

There is also more limited evidence that seafood intake may benefit consumers in other ways, like promoting heart health, reducing the risk of cardiovascular disease events, and lowering depression risk in adults.

In other words, whether you're serving children, pregnant women, or adults of any age – seafood likely has a positive impact. The Dietary Guidelines recommend that adults eat

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fruits all pack a powerful advantage! From a general nutrition standpoint, berries are rich in vitamins, minerals, and fiber. They earn their spot on the functional foods list, though, due to their high levels of bioactive compounds called polyphenols.

Research suggests that these polyphenols may reduce oxidative stress and inflammation, both of which are linked to chronic disease risk. Indeed, several studies suggest berries may lessen the risk of metabolic syndrome and possibly cardiovascular disease. Berries may also promote positive effects on cognitive health.




## REFERENCES

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at least 8 ounces of seafood each week, with smaller portions for children. It's important that children, pregnant women, and breastfeeding women avoid seafood options that are high in mercury (like shark, swordfish, king mackerel, tilefish, and bigeye tuna).

Ways to include it:

- Use fish in dishes that are already familiar to students or residents. For example, a taco recipe using meat can be modified to use fish instead.
- Rather than a basic grilled cheese, level up with a tuna melt.
- Experiment with different types of seafood as an entree. Some folks may prefer oily bluefish or salmon, while others might like milder white fish options.
- Sandwiches and wraps can make great bases for experimenting with seafood – like a shrimp po' boy, a blackened salmon wrap, or a parmesan crusted pollock sandwich.
- If price is a concern, frozen and canned seafood may be more economical choices for your menu. For example, canned tuna or salmon can be used in various ways, from seafood dips to breakfast patties to pasta dishes.

With a little culinary creativity, you can incorporate a variety of functional ingredients into your menu—no matter the work setting. 



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This **Level II NUTRITION** article assumes that the reader has a thorough knowledge of the topic. The desired outcome is to facilitate application of knowledge into practice by drawing connections among ideas and using information in new situations.

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1. Yogurt and kefir are examples of dairy products that contain which functional ingredient?
  - A. Probiotics
  - B. Omega-3 fatty acids
  - C. Anthocyanins
2. Which of the following is a possible concern with increasing fermented vegetable intake?
  - A. They contain very little fiber
  - B. They can be high in sodium
  - C. They are high in saturated fat
3. What is the name of the phenolic compound in olive oil that is linked to several health benefits?
  - A. Oleocanthal
  - B. Beta glucan
  - C. Betalain
4. What is the name of the soluble fiber thought to be responsible for many of the cholesterol lowering properties of oats?
  - A. Oleocanthal
  - B. Beta glucan
  - C. Betalain
5. How do plant sterols and stanols impact cholesterol levels?
  - A. Increase cholesterol because they have a similar chemical structure
  - B. Decrease cholesterol by removing plaque buildup in arteries
  - C. Decrease cholesterol by competing with cholesterol for absorption in the intestines
6. Which of the following is *false* regarding beets and human health?
  - A. Beets contain dietary nitrates that may lower blood pressure
  - B. Beets are very high in protein, which support wound healing
  - C. Beets contain betalains, phytochemicals that may prevent cell damage
7. Why are berries thought to be a functional food?
  - A. They contain high levels of omega-3 fatty acids
  - B. They are a source of probiotics with live bacteria cultures
  - C. They are rich in polyphenols that may reduce inflammation
8. Which of the following is *false* regarding seafood and pregnancy?
  - A. Seafood intake has been linked to better cognitive development in the child
  - B. Pregnant women should avoid high mercury seafood choices
  - C. No evidence suggests seafood intake is beneficial during pregnancy



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