Sunflower kernel is rich in a number of components that have been shown to act as antioxidants and anticarcinogens, and to protect against cardiovascular and other diseases, thus it can be considered a functional food. In comparison to other nuts and foods high in these compounds, sunflower kernel contains high levels of vitamin E, betaine, phenolic acids and choline. In addition, kernel is a good source of arginine and lignans compared to some nuts. Each of these compounds, while perhaps unfamiliar to the layperson, has been studied by the scientific community and shown to offer a variety of health benefits. Consumers are increasingly interested in functional foods, offering manufacturers of baked goods and snack foods the opportunity to consider kernel as an ingredient in new products in order to deliver upon this growing demand.

How does the functional content of the sunflower kernel compare to other foods?
The following charts illustrate levels of functional phytochemicals prevalent in sunflower kernel compared to other sources of each compound. When considered in aggregate, the annaing kernel adds a nutritional wallop to a wide array of products, such as breads, muffins, crackers, and snack foods, just to name a few.

What are some examples of functional foods?
Actually, most foods are functional, at least to some degree, since they provide important nutrients essential for good health. Here are a few examples of functional foods:

- Tomatoes contain “lycopene”, which may decrease the risk of developing certain cancers.
- Onions and garlic contain “diallyl sulfide”, which lowers LDL cholesterol and maintains a healthy immune system.
- Cranberries and chocolate contain “proanthocyanidins”, which have been shown to improve urinary tract health and may reduce risk of cardiovascular disease.
- Sunflower kernel, the edible heart of the sunflower seed, has recently been studied. Research indicates kernel is a good source of phytochemicals (non-nutrient plant chemicals) that can be protective against disease. A few specific phytochemicals prevalent in kernel, as well as their respective health benefits include:
  - Vitamin E (tocopherols) – may protect against cardiovascular disease.
  - Betaine – may protect against cardiovascular disease.
  - Phenolic acids (chlorogenic acid) – antioxidant and anticarcinogen.
  - Choline – plays a role in memory and cognitive function.
  - Arginine – potential heart-health benefits.
  - Lignans – may protect against heart disease and some cancers, lowers LDL cholesterol and triglycerides.

*Chlorogenic acid
*Total tocopherol

VITAMIN E*: Cardiovascular Benefits

ARGININE: Potential Heart-Health Benefits

PHENOLIC ACID*: Antioxidant and Anticarcinogen

CHOLINE: Memory & Cognitive Function

BETaine: Cardiovascular Benefits

LIGNANS: Heart-Health, Cancer, Cholesterol and Tryglyceride-Lowering Benefits
Consumers and Functional Foods

While an exact definition continues to evolve, functional foods provide benefits beyond basic nutrition; they may prevent certain disease(s) or promote better health. Many experts contend functional foods’ benefits are more effectively derived from the consumption of foods, rather than supplements.

In February 2000, International Food Information Council (IFIC) conducted quantitative research exploring consumer attitudes toward functional foods. Some highlights include:

- **59%** of Americans believe that certain foods have health benefits that go beyond basic nutrition and may reduce the risk of disease or other health concerns.
- **74%** believe that food and nutrition play a “great role” in maintaining or improving overall health.
- **45%** list heart health as their top health concern.
- **31%** list cancer as their top health concern.

**Consumption of Functional Foods on the Rise**

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of Americans eating up to three foods for functional health benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>20%</td>
</tr>
<tr>
<td>2000</td>
<td>30%</td>
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</tbody>
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Based on research completed in March 2001 by Katherine M. Phillips, Ph.D., of Virginia Polytechnic Institute and State University.