

# **Functional Foods with their Health Benefits**

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## Distribution of phytochemicals in different plant foods

Plant food	Phytochemicals
Garlic	Sulfides, Terpenes
Green Tea	Phenolic acid, Flavonoids, Coumarins,
Soybean	Phytates, Phenolic acid, Coumarins, Flavonoids, Terpenes, Carotenoids
Cereals	Phytates, Phenolic acid, Coumarins, Flavonoids, Terpenes
Citrus	Phenolic acid, Coumarins, Flavonoids, Terpenes, carotenoids
Flaxseeds	Phenolic acid, Coumarins, Flavonoids, Terpenes, lignans

## Functional foods with their health benefits (Hasler,2002)

Functional food	Bioactive component	Health benefit	Type of evidence	Strength of evidence	Recommended amount or frequency of intake	Regulatory status
Fortified margarines	Plant sterol and stanol esters	Reduce total and LDL cholesterol	Clinical trials	Very strong	1.3 g/d for sterols	FDA approved Health claim
Psyllium	Soluble fiber	Reduce total and LDL cholesterol	Clinical trials	Very strong	1 g/d	FDA approved Health claim
Soy	Protein	Reduce total and LDL cholesterol	Clinical trials	Very strong	25 g/d	FDA approved Health claim
Whole oat products	$\beta$ -Glucan	Reduce total and LDL cholesterol	Clinical trials	Very strong	3 g/d	FDA approved Health claim
Cranberry juice	Proanthocyanidins	Reduce urinary tract infections	Small number of clinical trials	Moderate	300 mL/d	Conventional food

# Functional foods with their health benefits

Functional food	Bioactive component	Health benefit	Type of evidence	Strength of evidence	Recommended amount or frequency of intake	Regulatory status
Garlic	Organosulfur compounds	Reduce total and LDL cholesterol	Clinical trials	Moderate	600–900 mg/d	Conventional food or dietary supplement
Green tea	Catechins	Reduce risk of certain types of cancer	Epidemiological	Weak to moderate	Unknown	Conventional food
Spinach, kale, collard greens	Lutein/zeaxanthin	Reduce risk of age-related macular degeneration	Epidemiological	Weak to moderate	6 mg/d	Conventional food or dietary supplement
Tomatoes and processed tomato products	Lycopene	Reduce risk prostate cancer	Epidemiological	Weak to moderate	Daily	Conventional food

# Functional foods with their health benefits

Functional food	Bioactive component	Health benefit	Type of evidence	Strength of evidence	Recommended amount or frequency of intake	Regulatory status
Lamb, turkey, beef, dairy	CLA	Reduce breast cancer	<i>In vivo</i> and <i>in vitro</i> studies	Weak	Unknown	Conventional food
Cruciferous, vegetables	Glucosinolates, indoles	Reduce risk of certain types of cancer	Epidemiological	Weak	3 or more servings/wk	Conventional food
Fermented dairy products	Probiotics	Support GI health, boost immunity	<i>In vivo</i> and <i>in vitro</i> studies, limited clinical data	Weak	Daily	Conventional food or dietary supplement

# Effect of processing on functional components in food

- Length of post harvest storage
- Thermal processing- steam blanching
- 30-80% of bioactive isothiocyanates lost during heat processing
- High temp. (> 100 oC) inactivates key enzymes myrosinase
- Heating of garlic at 60-100 oC results in significant losses of its anti-inflammatory, anti -cancer, anti -microbial & anti -oxidant activities.
- Bioavailability of carotenoids have been shown to improve with processing
- Brewing of tea leaves, whether black or green, releases 69–85 % of their bioactive flavonoids within 3–5 min in hot water
- (Trevisanato & Kim 2000)