Polyphenols in Food **Adapted from: Manach A, et al. Polyphenols: Food sources and bioavailability. *Am J Clin Nutr*. 2004;79 by Liz Lipski, PhD, CCN, CHN 2008**		
Phenolic acids	• derivatives of benzoic acid	Strawberries, raspberries, blackberries, tea, black radish, onions
	○ tannins (also considered proanthocyanidins)	grapes, peaches, kakis, apples, pears, berries, beverages (wine, cider, tea, beer, etc), chocolate
	○ gallic acid	
	• derivatives of cinnamic acid ○ p-coumaric ○ caffeic ○ ferulic ○ sinapic acids	coffee, blueberries, kiwis, plums, cherries, apples
Flavonoids	• Flavonols are abundant in fruits and vegetables	onions, curly kale, leeks, broccoli, blueberries, red wine and tea, concentrated in brightly colored part of vegetables
	○ Catechins	tea, fruit, grapes, seeds of leguminous plants
	○ Proanthocyanidins (considered to be concentrated tannins)	red wine, certain varieties of cereals, eggplant, cabbage, beans, onions, radishes, black currants, blackberries, cherries, strawberries
	• Flavones are less abundant ○ luteolin ○ apigenin	Parsley, celery Millet, wheat Skin of citrus fruit
	• Flavanones ○ naringenin in grapefruit ○ hesperetin in oranges ○ eriodictyol in lemons	Tomatoes, aromatic plants such as mint, apples, highest concentrations in citrus fruit.
	• Isoflavones	Soy, clover
Lignans	Lignans are metabolized to enterodiol and enterolactone by the intestinal microflora	Flaxseed 1000x higher than other foods Minor sources: algae, lentils, triticale, wheat, garlic, asparagus, carrots, pears, prunes
Stilbenes	• Resveratrol	Red wine, red grapes