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Fiber's Impact on High-Sensitivity C-Reactive Protein Levels in Cardiovascular Disease

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Purpose

To determine if increased dietary or supplemental intake of fiber slows or prevents inflammation as evidenced by hs-CRP values.

Background

High sensitivity-CRP is the most sensitive lab test to detect inflammation in the body and helps predict cardiovascular risk.

- < 1 mg/L = low level prediction of CV events
- 1-3 mg/L = moderate level prediction of CV events
- > 3 mg/L = high risk for future CV events

Data Sources

CINAHL, Medline, Health Source: Nursing/Academic Edition, and the Cochrane Library.

Body Mass Index	
Normal Weight	18.5 – 24.9 kg/m2
Overweight	25.0 – 29.9 kg/m2
Obese	30 kg/m2 and above
National Heart Lung and Blood Institute (2008)	

Evidence

- Elevated hs-CRP levels have also been related to insulin resistance and metabolic syndrome
- Pharmacological agents, such as statin drugs, have been shown to decrease hs-CRP levels
- Dietary fiber, a non-pharmacological remedy, has also been shown to decrease hs-CRP levels

Soluble and Non-soluble Fiber Sources

	Food Sources	Serving Size	Amount of fiber grams (g) per serving
Soluble Sources	oatmeal	½ cup, dry	4 g
	oatbran	1 cup, cooked	5.7 g
	lentils	1 cup, cooked	15.6 g
	nuts (almonds)	1 ounce	3.5 g
	beans (black)	1 cup, cooked	15.0 g
	peas (frozen)	1 cup, cooked	8.8 g
	apples	1 apple	3.3 g
	pears	1 pear	5.1 g
	strawberries	1 cup	3.3 g
	blueberries	1 cup, raw	3.5 g
Non-soluble Sources	whole wheat bread	1 slice	1.9 g
	barley	1 cup, raw	31.2 g
	couscous	1 cup, cooked	2.2 g
	brown rice	1 cup, cooked	3.5 g
	bulgur	1 cup, dry	25.6 g
	whole grain breakfast cereals (Kellogg’s All-Bran)	½ cup	8.8 g
	wheat bran	1 cup, crude	25 g
	seeds (sunflower, dry roasted, salted)	¼ cup	2.9 g
	carrots	1 cup, raw	3.1 g
	cucumbers	1 cup, peeled, raw	0.8 g
	zucchini	1 cup, cooked	3 g
	celery	1 cup, raw	1.9 g
	tomatoes	1 tomato, raw	1.5 g

Harvard School of Public Health (2008); Quaker Oats (2009); USDA (2009); Nutrition Data (2009).

Findings

Evidence from this review suggested significant associations between fiber consumption and decreased risk for cardiovascular disease as evidenced by a decrease in hs-CRP levels. Six of the 7 articles reviewed showed statistically significant decreases in hs-CRP levels as dietary or supplemental intake of fiber was increased.

Implications

Fiber in the diet may play a strong role in cardiovascular health as evidenced by 6 clinical trials completed using amount of fiber intake in relation to inflammation, particularly hs-CRP levels. Patients need to be educated regarding a high fiber diet, either by dietary or supplemental means, using the recommended 25 - 30 grams of fiber per day.

Key Words

Fiber, Inflammation, Cardiovascular disease, Literature Review.