

Does 5-a-day keep the doctor away? Impact of fruit and vegetable intake on C-reactive protein.

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Introduction

Chronic diseases are caused by inflammation. Diets high in fruits and vegetables are associated with lower levels of inflammation, and lower risks of chronic diseases including cardiovascular disease and diabetes. C-reactive protein (CRP), an inflammatory marker, effects the level of inflammation and therefore potential risks of chronic diseases. A low CRP level is classified as < 1 mg/L; a medium CRP level is between 1mg/L and 3mg/L, and a high CRP is > 3mg/L.

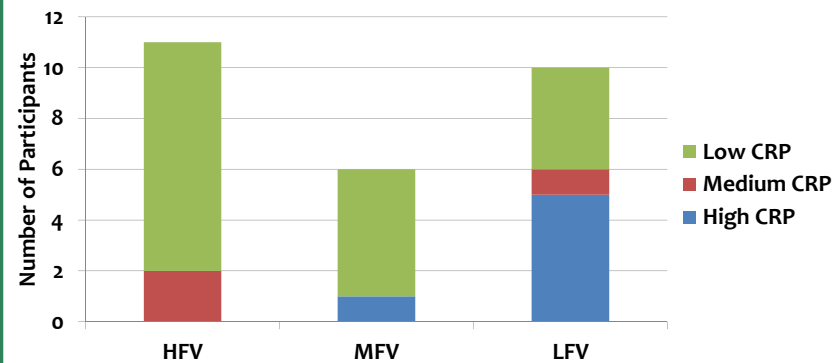
Purpose

The purpose of this study was to determine whether high fruit and vegetable intake is inversely associated with serum CRP levels in college-aged subjects.

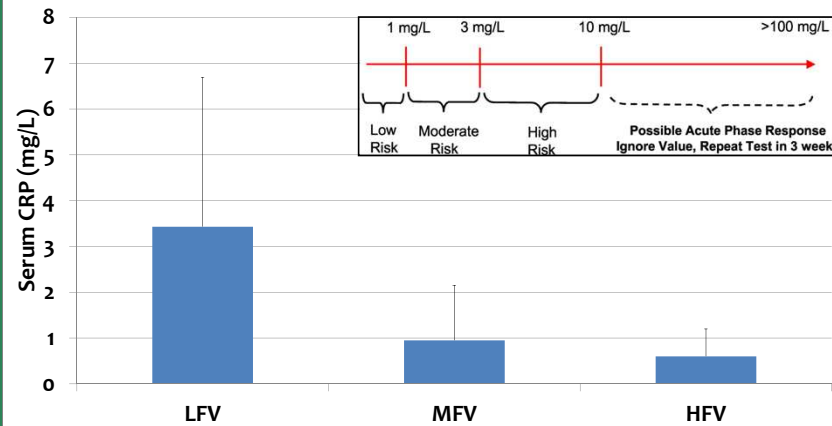
Methods

- Approval from Institutional Review Board and informed consent were obtained
- 27 college-aged Nutrition students (6 males, 21 females) provided 7-day diet record
- 7-day diet records were sorted according to amount and variety of fruit and vegetable intake:
 - High fruit and vegetable intake (HFV) group [n=11] >5 servings a day and at least 5 different types of fruits and vegetables per day
 - Medium fruit and vegetable intake (MFV) group [n=6] 2-5 servings a day with some variety in type consumed
 - Low fruit and vegetable intake (LFV) group [n=10] <1 servings a day with little to no variety in type consumed
- Serum hs-CRP levels were measured using the Cholestech LDX System

Number of participants with low, medium or high CRP levels compared to fruit and vegetable intake



Serum CRP values compared to fruit and vegetable intake



Results

- ANOVA was used to determine the difference between groups; the CRP mean of the HFV group is statistically different from the CRP mean for the LFV group, $p = 0.013$
- 82% of participants in the HFV group had low serum CRP values [9 out of 11]
- 0% of participants in the HFV group had high serum CRP values [0 out of 11]
- 50% of participants in the LFV group had high serum CRP values [5 out of 10]

Conclusions

- Individuals in the HFV or MFV groups on average have CRP levels below 1 mg/L [low CRP] but those in the LFV group have on average CRP values in the high range [CRP > 3mg/L].
- 5 individuals (19%) had elevated CRP levels even in this young college aged population indicating inflammation and if these elevated levels are chronic, an increased risk for developing disease.
- The USDA Dietary Guidelines' recommendation of five or more servings of a variety of fruits and vegetables per day appears to be good advice to keep serum C-reactive levels low.
- Future research may entail increasing fruit and vegetable intake in LFV group to see if CRP decreases.

Acknowledgements

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