

ARIC Manuscript Proposal # 890

PC Reviewed: 06/18/02

Status: A

Priority: 1

SC Reviewed: 06/18/02

Status: A

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1.a. Full Title:

Plasma Fatty Acid Composition and Incidence of Coronary Heart Disease in Middle Aged Adults: The Atherosclerosis Risk in Communities (ARIC) Study

b. Abbreviated Title (Length 26 characters):

Plasma FA composition and CHD

2. Writing Group (list individual with lead responsibility first):

Lead: Lu Wang

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Writing group members: Aaron Folsom, John Eckfeldt,

3. Timeline: 4 months

Approval of proposal

Literature review – 2 weeks

Outline paper – 1 weeks

Data analysis – 4 weeks

Manuscript writing – 5 weeks

Review and edit – 6 weeks

4. Rationale:

Dietary fat composition influences several CHD risk factors including dyslipidemia, hypertension, obesity, type II diabetes and possibly thrombosis. Epidemiological studies investigating the association between dietary fat composition and incidence of CHD have not been consistent. Though several cohort studies did reveal an independent and positive relation between intake of saturated fatty acids (SFAs) and CHD and an inverse relation of polyunsaturated fatty acids (PUFAs) or n-3 FAs consumption with cardiovascular events, several other cohort studies have failed to find significant associations between dietary fat patterns and risk of CHD.

Methods to estimate dietary fat composition among free living subjects are far from perfect. Fatty acid (FA) composition of serum lipid esters has been shown to mirror the FA pattern of the diet prior to the analysis. In the ARIC Study Minneapolis field center, plasma FA composition was a reasonably accurate biochemical marker of long-term proportionate FA intake. We propose to investigate the relation of plasma cholesterol esters (CE) and phospholipids (PL) FA composition with incidence of CHD during 11 years of follow-up in the Minneapolis cohort.

5. Main Hypothesis/Study Questions:

The objective of this analysis is to investigate the association between plasma FA composition and the risk of incident CHD. We propose to test the following hypothesis:

Hypothesis 1: Higher proportions of SFAs in plasma CE and PL are associated with an increased incidence of CHD.

Hypothesis 2: Higher proportions of PUFAs in plasma CE and PL are associated with a decreased incidence of CHD.

Hypothesis 3: Higher proportions of $\omega 3$ FA in plasma CE and PL are associated with a decreased incidence of CHD.

6. Data (variables, time window, source, inclusions/exclusions):

Inclusion/ Exclusions: participants at the ARIC Minneapolis center only (n=4,009), excluding people with prevalent CHD, prevalent stroke, missing FA data, taking cholesterol-lowering medications, non-whites.

Independent variable: plasma CE and PL FA composition for ARIC Minneapolis participants. Each individual fatty acid is expressed as a percentage of total FAs. Plasma SFAs, MUFAs, and PUFAs are calculated by summing all the respective FAs with 12-24 carbon atoms.

Covariates: traditional atherosclerosis risk factors: age, gender, smoking status and amount, prevalent diabetes status, BMI, waist-to-hip ratio, sports index.

Dependent variables: CHD incidence (cardiac death/non-fatal MI/silent MI/cardiac procedure), time to first event.

7.a. Will the data be used for non-CVD analysis in this manuscript? ☐ Yes ☒ No

b. If Yes, is the author aware that the file ICTDER02 must be used to exclude persons with a value RES_OTH = "CVD Research" for non-DNA analysis, and for DNA analysis RES_DNA = "CVD Research" would be used? ☐ Yes ☐ No
(This file ICTDER02 has been distributed to ARIC PIs, and contains the responses to consent updates related to stored sample use for research.)

8.a. Will the DNA data be used in this manuscript? ☐ Yes ☒ No

8.b. If yes, is the author aware that either DNA data distributed by the Coordinating Center must be used, or the file ICTDER02 must be used to exclude those with value RES_DNA = "No use/storage DNA"? ☐ Yes ☐ No

9. The lead author of this manuscript proposal has reviewed the list of existing ARIC Study manuscript proposals and has found no overlap between this proposal and previously approved manuscript proposals either published or still in active status. ARIC Investigators have access to the publications lists under the Study Members Area of the web site at: <http://bios.unc.edu/units/csc/ARIC/stdy/studymem.html>

☒ Yes ☐ No