The Dynamic Influence of a High Fat Diet on Cholesterol Variability

Dave Feldman
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Conflicts of Interest:
None
Background

- Software Engineer (30 Years)
- Business Developer
- Entrepreneur
Backstory

• Started Keto in April 2015
• Enjoyed seven amazing months, feeling better than ever
• Got cholesterol bloodwork done in November 2015
  • Total Cholesterol: 329!!
• Began studying everything I could find on Cholesterol and the Lipid System
WE ALREADY KNOW THE KILLER IS CHOLESTEROL.

WE JUST NEED TO GET ENOUGH EVIDENCE TO PROVE IT.
Extreme N=1

Sometimes science can be a loner
Blood Tests
51 blood tests in the last 15 months
The Inversion Pattern

More Fat, Less Cholesterol... yes, really
Low Density Lipoprotein (LDL-P)

Triglycerides (Trigs)

Cholesterol (LDL-C)
Three Day Average of Dietary Fat vs LDL-C Cholesterol
Three Day Average of Dietary Fat vs LDL-C Cholesterol
Three Day Average of Dietary Fat vs LDL-C Cholesterol

- Three Day Average of Dietary Fat
- LDL-C Cholesterol
Three Day Average of Dietary Fat vs LDL-C Cholesterol

349 grams of fat
Three Day Average of Dietary Fat vs LDL-C Cholesterol

- 349 grams of fat
- 218 LDL-C

Graph showing the correlation between dietary fat and LDL-C cholesterol over a three-day period.
Dietary Fat Inversion for LDL-C

Three Day Average of Dietary Fat Before Day of Blood Test

- Dietary Fat from 3 Days Before Blood Test
- Dietary Fat from 2 Days Before Blood Test
- Dietary Fat from 1 Day Before Blood Test

High Inverse Correlation

Resulting LDL-C

Morning of Blood Test
Three Day Average of Dietary Fat vs LDL-C Cholesterol

The graph shows the three-day average of dietary fat compared to LDL-C cholesterol levels. The data points fluctuate over the 29-day period, with dietary fat levels on the x-axis and LDL-C cholesterol levels on the y-axis. The graph indicates that there is a correlation between the intake of dietary fat and LDL-C cholesterol levels, with higher dietary fat intake generally corresponding to higher LDL-C cholesterol levels.
Three Day Average of Dietary Fat *Inverted* vs LDL-C Cholesterol

Pearson = -0.8053     \( R^2 = 0.64851 \)
Three Day Average of Dietary Fat *Inverted* vs LDL-C Cholesterol
Three Day Average of Dietary Fat Inverted vs HDL-C Cholesterol

Pearson = -0.6448   \[R^2 = 0.41586\]
Dietary Fat Inversion for LDL-P

Three Day Average of Dietary Fat Before Day of Blood Test

- Dietary Fat from 5 Days Before Blood Test
- Dietary Fat from 4 Days Before Blood Test
- Dietary Fat from 3 Day Before Blood Test
- Dietary Fat from 2 Days Before Blood Test
- Dietary Fat from 1 Day Before Blood Test

... With a Two Day Gap

High Inverse Correlation

Resulting LDL-P

Morning of Blood Test
Three Day Average of Dietary Fat, With a Two Day Gap vs LDL-P Cholesterol
Three Day Average of Dietary Fat, With a Two Day Gap \textit{Inverted} vs LDL-P Cholesterol

Pearson = -0.8185 \quad R^2 = 0.66999
Three Day Average of Dietary Fat, With a Two Day Gap vs Small LDL-P Cholesterol

Pearson = -0.6789  \quad R^2 = 0.46086
The Theory Behind the Inversion

It’s About the *Energy*, Not the *Cholesterol*
What everyone on a LCHF diet should know...

• A Low Density Lipoprotein has many jobs.
• But its primary job is to distribute energy from fat.
What everyone on a LCHF diet should know...

• A Low Density Lipoprotein has *many* jobs.
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What everyone on a LCHF diet should know...

• A Low Density Lipoprotein has *many* jobs.

• But its **PRIMARY** job is to distribute energy from fat.
Boat (LDL-P)

Passengers (Trigs)

Liferafts (LDL-C)
Gut Fat-Based Energy From Food

Chylomicrons

Chylomicrons Remnants

| 0-60 Minutes | 1-5 Hours | 6-12 Hours | 12 hours to 4 Days |
Liver Fat-Based Energy From Storage

Gut Fat-Based Energy From Food

Chylomicrons

Chylomicrons Remnants

VLDLs

LDLs

0-60 Minutes | 1-5 Hours | 6-12 Hours | 12 hours to 4 Days
Liver Fat-Based Energy From Storage

Gut Fat-Based Energy From Food

Chylomicrons

Chylomicrons Remnants

VLDLs

LDLs

0-60 Minutes  |  1-5 Hours  |  6-12 Hours  |  12 hours to 4 Days
Liver Fat-Based Energy From Storage

Gut Fat-Based Energy From Food

Chylomicrons

Chylomicrons Remnants

VLDLs

LDLs

0-60 Minutes
1-5 Hours
6-12 Hours
12 hours to 4 Days

Blood Test
Day 1?
Day 2?
Day 3?
Lots and Lots of incoming energy from the GI Tract...
I guess I’ll Downregulate
Very Little incoming energy from the GI Tract... I guess I’ll Upregulate
Identical Diet Experiment

A.K.A. 2X the Cooking, 10X the Science
Darla Walker
Age 49, 5'3, 142lb
Total Cholesterol: 230
LDL Cholesterol: 152

Dave Feldman
Age 43, 6'3, 173lb
Total Cholesterol: 372
LDL Cholesterol: 280
We each ate exactly the same food at exactly the same time for 13 days in a row.

We had our blood drawn at the same time as well.
Total Cholesterol

TC: Absolute Comparison

- Total Chol Darla
- Total Chol Dave
Total Cholesterol

**Pearson = 0.9472**  **\( R^2 = 0.89721 \)**
LDL-C: Absolute Comparison

- LDL-C Darla
- LDL-C Dave

Dates:
- 7/8/16
- 7/9/16
- 7/10/16
- 7/11/16
- 7/12/16
- 7/13/16
- 7/14/16
- 7/15/16
- 7/16/16
- 7/17/16
- 7/18/16
LDL Cholesterol

**LDL-C : Absolute Comparison**

**LDL-C : Relative Comparison**

Pearson = 0.8899     R² = 0.79193
LDL Particle Count

**LDL-P : Absolute Comparison**

- **LDL-P Darla**
- **LDL-P Dave**

Graph showing LDL particle count over time from 7/8/16 to 7/18/16.
LDL Particle Count

**LDL-P : Absolute Comparison**

- LDL-P Darla
- LDL-P Dave

**LDL-P : Relative Comparison**

Pearson = 0.4159  
$R^2 = 0.17295$
LDL Particle Count (Excluding 7/18/16)

**LDL-P : Absolute Comparison**

- LDL-P Darla
- LDL-P Dave

**LDL-P : Relative Comparison**

Pearson = 0.78  \[ R^2 = 0.60843 \]
The Extreme Drop Experiment
Ketogains Seminar, October 9th, 2016
October 4th, 5th, & 6th
Average day of food for three days prior to test:

Calories: 748
Fat: 63g
Saturated Fat: 24g

Friday Morning Blood Test

October 7th, 8th, & 9th
Average day of food for three days prior to test:

Calories: 5,048
Fat: 461g
Saturated Fat: 274g

Monday Morning Blood Test
October 7th - Total Cholesterol: 330
Difference: -66
October 10th - Total Cholesterol: 264

LDL-C: 256
Difference: -73
LDL-C: 183

LDL-P: 2597
Difference: -1115
LDL-P: 1482

Small LDL-P: 441
Difference: -396
Small LDL-P: <90

Triglycerides: 119
Difference: +56
Triglycerides: 63

HDL-C: (Higher is Better)
50
Difference: +18
HDL-C: 68

HDL-C: (Higher is Better)
The Cholesterol Drop Protocol
(A.K.A. The “Feldman Protocol”)

Option 1 - Three and a Half Days, One Blood Test

Day 1: High Calorie
Day 2: High Calorie
Day 3: High Calorie
Morning of Day 4: Blood Test

Option 2 - Six and a Half Days, Two Blood Tests

Day 1: Low Calorie
Day 2: Low Calorie
Day 3: Low Calorie
Day 4: High Calorie
Morning of Day 4: Blood Test
Day 5: High Calorie
Day 6: High Calorie
Morning of Day 7: Blood Test

Option 3 - Ten and a Half Days, Four Blood Tests

Day 1: Low Calorie
Day 2: Low Calorie
Day 3: Low Calorie
Day 4: Low Calorie
Morning of Day 4: Blood Test
Day 5: Low Calorie
Day 6: Low Calorie
Morning of Day 6: Blood Test
Day 7: High Calorie
Day 8: High Calorie
Morning of Day 9: Blood Test
Day 9: High Calorie
Day 10: High Calorie
Morning of Day 11: Blood Test
A Few Good Volunteers
Bill Davis

- LDL History for quarterly testing over a year and a half: 138, 109, 174, 141, 130 (8/2016)
- Protocol: 5,000 calories a day for three days. All extra calories from fat.
- LDL as of 11/2016: 88
- HDL simultaneously went from 98 to 112
Tom Seest

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<tr>
<th>Date</th>
<th>3-0 Fat</th>
<th>LDL-C</th>
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<tbody>
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Tom Seest Fasting Experiment

[Graph showing LDL-C and 3-0 Fat levels from 11/4/16 to 11/26/16]
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<td>Fat/Day</td>
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## Silvio Ferro

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Silvio Ferro

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Carl Franklin

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<td>Small LDL-P</td>
<td>964</td>
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23 Who Have Performed Protocol

• 100% success rate so far.
• Nine have tried out of curiosity.
• Ten have used it to “get my doctor off my back.”
• Four have used it to improve their life insurance rate.
Jill’s Story
“What good is a ketogenic diet if you won’t be alive to enjoy it.” – Jill’s GP
“... that stupid test wrecked my life and got me to ignore what my body was telling me all along: that it LOVES KETO.” – Jill
Closing Thoughts

Do I still have time left?
The “Preference Point”

• There appears to be a distinct level of lipids that the body regulates toward.

• For some on LCHF, this can be dramatically high. (*Hyper-responders*)

• Is this bad? We don’t know yet. But I have a lot of reason to feel it isn’t.
Why this new data may be a Game Changer

• The lipid system is far more dynamic than has been believed.
  • All cholesterol markers are highly influenced by the diet of just the previous three days.
  • All particle markers are highly influenced by the diet of just the previous five days.

• This pattern is an inversion.
  • The higher the dietary fat, the lower total and LDL cholesterol.
  • The lower the dietary fat (including fasting), the higher total and LDL cholesterol.
Next Steps

• Try the protocol yourself! – It just takes a few days and you can expand the data for all of us.

• Celebrity Low Carbers – PLEASE try it!

• I’m currently working at getting a formal study put together. Please let me know if you can help.
Acknowledgements

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• Justin Hayes
• Kevin Ruther
• Richard Morris
• Silvio Ferro
• Tom Seest