

# Personalized Nutrition Plan

Name: \_\_\_\_\_ Leo Fischer \_\_\_\_\_

Case #: \_\_\_\_\_ James, \_\_\_\_\_

## Overall Dietary Composition

### Current Daily Calorie Intake:

**2800 kcal** (assuming James only had 1 soda and 1 can of beer consumption, James sometimes says he has 2 sodas and 2 beers a day)

### Estimated Energy Requirements (BMR x physical activity factor):

Based on Harris-Benedict equation:  $BMR\ 1758.9 \times 1.55$  (moderate physical activity factor) = **2720 kcal/day**

The DeLorenzo Equation:  $BMR\ 2036.12 \times 1.55 =$  **3150 kcal/day**<sup>1</sup>

The DeLorenzo equation might be more accurate for James since his slender body appearance has more lean body mass than fat.

WHO/FAO/UNU Equation:  $BMR\ 1800\ kcal/day \times 1.78$  activity factor (WHO suggestion for moderate activity level) **3204 kcal/day**<sup>2</sup>

### Caloric Intake Goal:

N/A estimated EER is too close to current daily calorie intake to suggest modification in number of calories. Current slender appearance, energy levels, normal 21.8 BMI, and no history of body weight change suggests no caloric intake goal is necessary.<sup>3</sup>

## Macronutrients

**Discuss optimal and desired levels below**

<sup>1</sup> De Lorenzo A, Bertini I, Candeloro N, Piccinelli R, Innocente I, Brancati A. A new predictive equation to calculate resting metabolic rate in athletes. *J Sports Med Phys Fitness*. 1999;39(3):213-219

<sup>2</sup> FAO/WHO/UNU Expert Consultation. Energy and protein requirements. WHO Technical Report Series 724: 1-206. Geneva: World Health Organization, 1985.

<sup>3</sup> Lucan SC, DiNicolantonio JJ. [How calorie-focused thinking about obesity and related diseases may mislead and harm public health. An alternative.](#) *Public Health Nutr*. 2015 Mar;18(4):571-81. doi: 10.1017/S1368980014002559. Epub 2014 Nov 24. PubMed PMID: 25416919.

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Case #: \_\_\_\_\_ James, Dyslipidemia, 45 yr \_\_\_\_\_ Date: 1/29/18 \_\_\_\_\_

<p><b>Current CHO intake:</b> 1653kcal 57% of calories/day</p> <p><b>Goal CHO Intake:</b> N/A</p>	<p><b>Current Protein Intake:</b> 501kcal 17% of calories/day 127g</p> <p><b>Goal Protein intake:</b> N/A</p>	<p><b>Current Fat Intake:</b> 639kcal 22% of calories/day</p> <p><b>Goal Fat intake:</b> N/A</p>
<ul style="list-style-type: none"> <li>• Substantially reduce or eliminate processed simple carbs.</li> <li>• Based on 1 day diet analysis, James consumed 117g of added sugar. America Heart Association recommends eating less than 36g a day for CVD prevention.<sup>4</sup></li> <li>• 100g a day or more of added sugar is considered medically toxic.<sup>5</sup></li> <li>• Target CHOs that are only whole and have soluble fiber.</li> </ul>	<ul style="list-style-type: none"> <li>• 127g of protein, 225% of DV</li> <li>• Target whole sources of meat that are unprocessed and without nitrates added WHO lables processed meat as type I and 2A level of carcinogenic.<sup>6 7</sup></li> <li>• Avoid Advanced glycation end products (AGEs). Often found in prepared crispy foods, foods with added</li> </ul>	<ul style="list-style-type: none"> <li>• Eat healthy sources of fat from whole foods.</li> <li>• Lose the fear of fat and learn to enjoy health sources of fat in all whole foods. Including, unprocessed meats, nuts, peanuts, seeds, and legumes.</li> <li>• This does not include processed oils from bottles like corn, soybean and canola oil. Try refraining from using processed oils as much as possible.<sup>9</sup></li> </ul>

<sup>4</sup> American Heart Association Nutrition Committee of the Council on Nutrition, Physical Activity, and Metabolism and the Council on Epidemiology and Prevention.. [Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association](#). Circulation. 2009 Sep 15;120(11):1011-20. doi: 10.1161/CIRCULATIONAHA.109.192627. Epub 2009 Aug 24. PubMed PMID: 19704096.

<sup>5</sup> Ervin RB, Ogden CL. [Consumption of added sugars among U.S. adults, 2005-2010](#). NCHS Data Brief. 2013 May;(122):1-8. PubMed PMID: 23742909.

<sup>6</sup> Carcinogenicity of consumption of red and processed meat Bouvard, Véronique et al. the Lancet Oncology , Volume 16 , Issue 16 , 1599 - 1600

<sup>7</sup> <https://www.hsph.harvard.edu/nutritionsource/2015/11/03/report-says-eating-processed-meat-is-carcinogenic-understanding-the-findings/>

<sup>9</sup> Frank B. Hu et al., "Dietary Fat Intake and the Risk of Coronary Heart Disease in Women," *New England Journal of Medicine* 337,no. 21 (1997): 1491-99.

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	sugar, fried, burnt, or oxidized etc. <sup>8</sup>	
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**Special instructions and rationale:**

James' diet has been affected by the fat-fear craze in USA and he has replaced most of his total calories with refined processed carbohydrates to avoid fat sources. Which is probably a major contributor to his elevated levels of cholesterol and triglycerides. Instead of eating healthy fat sources from whole foods James is eating a lot of refined carbohydrates composed of mostly empty-calories with no nutritional value. Even in the absence of high body fat content, there is a strong causal/contributory role of high dietary refined carbohydrates that lead to metabolic disease like dyslipidemia and inflammation<sup>10</sup>.

Yet, there is no significant evidence that dyslipidemia or heart disease, is caused by eating a diet with a certain caloric % of CHO, Protein, Fat or even Saturated fat when sources are from whole foods<sup>11</sup>. Therefore, there is no reason to state a % goals for CHO, PRO or FAT, and any such recommendation would be misleading, unsupported, confusing and potentially harmful to clients when considering calorie counting behaviors. Additionally, the inaccuracy of self-dietary records is often between 30%-40% underestimated, meaning most client's analysis of their own diets is inaccurate and useless.<sup>12</sup> As proven by the dietary recall offered by James.

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<sup>8</sup> Advanced Glycation End Products in Nondiabetic Patients With Coronary Artery Disease Masao Kanauchi, Nobuhiro Tsujimoto, Toshio Hashimoto Diabetes Care Sep 2001, 24 (9) 1620-1623; DOI: 10.2337/diacare.24.9.1620

<sup>10</sup> Stanhope KL. Sugar consumption, metabolic disease and obesity: The state of the controversy. *Critical reviews in clinical laboratory sciences*. 2016;53(1):52-67. doi:10.3109/10408363.2015.1084990.

<sup>11</sup> Meta-analysis of the prospective cohort studies evaluating the association of saturated fat with cardiovascular disease. January 13, 2010, doi: 10.3945/ajcn.2009.27725 *Am J Clin Nutr March 2010 vol. 91 no. 3 535-546*

<sup>12</sup> New methods using isotopes to measure sugar carbon may be useful for improving the accuracy of self-reports of soda consumption. Davy BM, et al. Association of delta13C in fingerstick blood with added-sugar and sugar-sweetened beverage intake. *JADA*, 2011;111:874-78

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All types of diets can be healthy if food sources are real, unprocessed, and whole food.<sup>13</sup> Even high fat diets and high saturated fat diets are shown to be protective against incidents of cardiovascular disease, dyslipidemia, and type 2 diabetes if sources of fat are from unprocessed whole foods. Lots of countries and cultures with high cholesterol levels and high fat diets have some of the lowest rates of heart disease. For example, Switzerland has an average diet of 40% of calories from fat, yet their rate of CHD deaths is about 100% less than U.S. This is true of most of western Europe which has an average of 35% of calories coming from fat and 10%-20% of total calories from saturated fat. Another example, the average total cholesterol in Switzerland is 243 mg/dl and 42% of the population have total cholesterol levels above 251 mg/dl which is high according to U.S. standards. (240mg/dl or above is considered very high in U.S.) yet they have one of the lowest rates of CVD in the world (about twice as low as the U.S) and highest life expectancy's.<sup>14</sup>

### Micronutrients

**Consider specific nutrients for disease or health conditions discuss below**

<b>Nutrient: Magnesium</b> Current Diet 50%-low  500mg/day	<b>Nutrient: Potassium</b> Current Diet 50%-low  5,000mg/day	<b>Nutrient: Calcium</b> Current diet – fine
<b>Nutrient: Niacin/B3</b>  1000-4000mg or higher, few times a week a week. Obtain from supplement.  Be aware taking more than 100mg might induce a niacin flush. Normal, not dangerous. Disappearing after an	<b>Nutrient: Omega-3 anti-inflammatory.</b>  Better to have a 4:1 ratio of omega 6 to 3. 1:1 is considered even better.  Obtain from only whole foods, vegetables, fruits and fish.	<b>Sodium</b>  Current intake 4000mg  American heart association indorses less than 1500mg/day to help lower blood pressure, specified in their DASH diet.  Eliminating sources of high salt content will often eliminate processed foods srouces.

<sup>13</sup> Lesser LI, Mazza MC, Lucan SC. [Nutrition myths and healthy dietary advice in clinical practice.](#) Am Fam Physician. 2015 May 1;91(9):634-8. Review. PubMed PMID: 25955738.

<sup>14</sup> Wilkins E, Wilson L, Wickramasinghe K, Bhatnagar P, Leal J, Luengo-Fernandez R, Burns R, Rayner M, Townsend N(2017). European Cardiovascular Disease Statistics 2017. European Heart Network, Brussels.

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hour or so. Hot, tingly feeling on skin.		
<p>Special instructions and rationale: Magnesium and potassium helps relax blood vessels/artery walls, and lower blood pressure. Potassium helps counteract sodium imbalance in diet.<sup>15</sup> Since James has a family history of CVD and high blood pressure, he should probably obtain higher levels of magnesium and potassium than the RDA.</p> <p>Niacin has also been shown to reduce cholesterol, triglycerides, Lp(a).<sup>16</sup></p> <p>Omega-3s have been shown to reduce inflammation and certain risk of CVD.<sup>17</sup></p>		

### Functional Foods

Functional Food(s):	Servings: Specify – per day or week	Rationale:
Garlic (whole, freshly chopped)	As much as you can (AMAYC)	Pharmacological studies on garlic have shown it can lower lipid values, prevent blood coagulation and it has antihypertensive properties. Active ingredient in garlic is Allicin. <sup>18</sup>
Fish Wild, not Farmed	Fish instead of chicken as	Chicken has a higher unhealthy fat profile compared to fish. Fish is often higher in Omega 3,

<sup>15</sup> M.C. Houston and K.J. Harper, "Potassium, Magnesium, and Calcium: Their Role in Both the Cause and Treatment of Hypertension," *Journal of Clinical Hypertension* 10, no. 7 (2008): 3–11; L. Widman et al., "The Dose-Dependent Reduction in Blood Pressure Through Administration of Magnesium: A Double-Blind Placebo-Controlled Crossover Trial," *American Journal of Hypertension* 6, no. 1 (1993), 41–45.

<sup>16</sup> R. Altschul et al., "Influence of Nicotinic Acid on Serum Cholesterol in Man," *Archives of Biochemistry and Biophysics* 54, no. 2 (1955): 558–59.

<sup>17</sup> D. Mozaffarian and J.H. Wu, "Omega-3 Fatty Acids and Cardiovascular Disease: Effects on Risk Factors, Molecular Pathways, and Clinical Events," *Journal of the American College of Cardiology* 58, no. 20 (2011): 2047–67.

<sup>18</sup> American Botanical Council, "Garlic," Herbalgram, <http://cms.herbalgram.org/expandedE/Garlic.html>.

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	much as possible.	and lower in Omega-6, which can be anti-inflammatory. <sup>19</sup>
Berries and Cherries	Included in your 2-3 servings of fruit a day.	All berries have high anti-inflammatory properties with natural antioxidants. Helps prevent cholesterol from oxidizing and creating plaque in arteries. <sup>20</sup>
Lots and Lots of Vegetables with some fruit.	AMAYC 8 servings a day at least.	In a study by Harvard people who ate more than 8 servings of vegetables/fruit a day were 30% less likely to have a heart attack or stroke. <sup>21</sup>
Nuts (mostly other nuts besides peanuts)	1 Ounce, 5 times a week or so.	People who eat nuts consistently have 30-50% lower risk of heart disease. <sup>22</sup>
Legumes or Beans	1 serving 4 times a week. Serving size is 1 cup cooked.	Fiber heavy. Study showed one serving of beans a day lowered the risk of heart attack by 38 percent! <sup>23</sup>
Celery	study says eating 4 stalks or more a day	Eating celery can help lower blood pressure by 8 mmHg for systolic and diastolic. <sup>24</sup>

<sup>19</sup> Jonny Bowden, *The 150 Healthiest Foods on Earth* (Beverly, MA: Fair Winds Press, 2

<sup>20</sup> H.C. Ou et al., "Ellagic Acid Protects Endothelial Cells from Oxidized Low-Density Lipoprotein-Induced Apoptosis by 366/414 Modulating the PI3K/Akt/eNOS Pathway," *Toxicology and Applied Pharmacology* 248, no. 2 (2010): 134-43.

<sup>21</sup> F.J. He et al., "Fruit and Vegetable Consumption and Stroke: Meta- Analysis of Cohort Studies," *The Lancet* 367, no. 9507 (2006):320-26.

<sup>22</sup> H.C. Hung et al., "Fruit and Vegetable Intake and Risk of Major Chronic Disease," *Journal of the National Cancer Institute* 96, no. 21 (2004): 1577-84.

<sup>23</sup> E.K. Kabagambe et al., "Decreased Consumption of Dried Mature Beans Is Positively Associated with Urbanization and Nonfatal Acute Myocardial Infarction," *Journal of Nutrition* 135, no. 7 (2005): 1770-75.

<sup>24</sup> Moghadam MH1, Imenshahidi M, Mohajeri SA. Antihypertensive effect of celery seed on rat blood pressure in chronic administration. *J Med Food*. 2013 Jun;16(6):558-63.

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Dark Chocolate or Pure Cacao Powder (Not milk chocolate, and without sugar is best)	100mg a day for 15 day is what some studies look at.	Can dramatically reduce blood pressure and help improve insulin resistance. <sup>25</sup>
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### Dietary Supplements

Supplement:	Dose:	Rationale:
Multivitamin once a week or once a month	1 capsule, try to find supplement without Iron for men.	Does not hurt, has not been proven to help, can only help shore up any nutritional deficiencies that exists in diet. Multivitamine which contain magnesium,
Insoluble Fiber (get from whole food not supplements, fiber from supplements does not have the same biological effect.)	Get from food including, beans, vegetables, oats, grains, and fruit.	Fiber helps reduce cholesterol and triglycerides. Binds to bile in the intestine thereby taking cholesterol out of the body and reducing blood lipid levels. It also prevents absorption of fat and cholesterol from meals so if you have a meal heavy on cholesterol or fat, make sure to include lots of fiber. <sup>26</sup>
Folic acid with your alcohol. Also, you enjoy beer, but can you enjoy red wine instead?	1 cup a night instead of a bottle or 2 of beer.	Alcohol decreases folate stores and intestinal absorption of folate, which can increase risk of cancer and inflammation. <sup>27</sup> Red wine has been linked to inhibiting the oxidation of

<sup>25</sup> Grassi D, Necozione S, Lippi C, et al. Cocoa reduces blood pressure and insulin resistance and improves endothelium-dependent vasodilation in hypertensives. *Hypertension*. 2005;46(2):398-405.

<sup>26</sup> D.M. Winham et al., "Pinto Bean Consumption Reduces Biomarkers for Heart Disease Risk," *Journal of the American College of Nutrition* 26, no. 3 (2007): 243-49.

<sup>27</sup> Halsted CH, Villanueva JA, Devlin AM, Chandler CJ. [Metabolic interactions of alcohol and folate](#). *J Nutr*. 2002 Aug;132(8 Suppl):2367S-2372S. PubMed PMID: 12163694.

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		cholesterol which prevents plaque build up in arteries. <sup>28</sup>
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### Nourishing Behaviors

Practice(s):	Instructions:	Rationale:
Start to reduce added sugars in the diet zero is the goal, below 50g a day is a great start.	Start slow and work your way day.	Processed sugars are addictive and much like smoking, can be very difficult to stop consuming.
Buy whole foods from grocery store instead of eating out at Subway or other fast foods.	Instead of buying a sandwich from subway, which has a lot of simple carbs/sugar, I would rather you buy a whole precooked chicken from Safeway. Save the leftover for tomorrow's lunch and enjoy with a whole fruit or vegetables.	Cut out the processed simple carbs and replace with healthy protein, fats and whole carb sources like fruit.

### Activity

Practice(s):	Time & Frequency:	Rational and kcal used:
Something like meditation to reduce stress. Meditation or maybe just a meditative nap, or yoga. Really anything that helps to reduce stress in your own way.	1-2 times a week	0 kcal Lower stress reduces cholesterol levels. <sup>29</sup>  No matter our level of stress we can always have less. Chronic stress creates hormones in the body like cortisol and adrenaline.

<sup>28</sup> A. Lugasi et al., "Cardio-Protective Effect of Red Wine as Reflected in the Literature," Abstract, *Orvosi Hetilap* 138, no. 11 (1997): 673-78; T.S. Saleem and S.D. Basha, "Red Wine: A Drink to Your Heart," *Journal of Cardiovascular Disease Research* 1, no. 4 (2010): 171-76.

<sup>29</sup> Miranda Hitti, "Cut Stress, Help Your Cholesterol," *WebMD Health News*, November 22, 2005, [www.webmd.com/cholesterol-management/news/20051122/cut-stress-help-your-cholesterol](http://www.webmd.com/cholesterol-management/news/20051122/cut-stress-help-your-cholesterol).

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		Chronic stress can create inflammation and contribute to heart attacks and strokes. Cortisol abundance promotes hardening of the arteries and calcification. Adrenaline tells the body to produce platelets in the blood, a sticky substance that chronically creates plaque in the arteries, sometimes leading to a thrombus block. <sup>30</sup>
Enjoy a hobby that is active!	Anything, half an hour a day is recommended.	N/A
Sleep	Between 7-9 hours	Sleep deprivation below 6 hours and greater than 9 hours on average is associated with increased risk for CVD. <sup>31</sup>

### Follow Up

**Client Goals:** Although this is subjective, use the case to identify what the client is coming in for

1. Hypertension
2. Dyslipidemia
3. CVD prevention

**Nutritionist Goals (your goals):** Be specific, how will you assess if these goals were met? Subjective Vs Objective information

1. Cholesterol Particle Size Test <sup>32</sup>

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<sup>30</sup> Hamer M, O'Donnell K, Lahiri A and Steptoe A. [Salivary cortisol responses to mental stress are associated with coronary artery calcification in healthy men and women](#) European Heart Journal: Advance Access; Published online September 10 2009

<sup>31</sup> Nagai M, Hoshida S, Kario K. Sleep Duration as a Risk Factor for Cardiovascular Disease- a Review of the Recent Literature. *Current Cardiology Reviews*. 2010;6(1):54-61. doi:10.2174/157340310790231635.

<sup>32</sup> Jacobson TA. [Lipoprotein\(a\), cardiovascular disease, and contemporary management](#). Mayo Clin Proc. 2013 Nov;88(11):1294-311. doi: 10.1016/j.mayocp.2013.09.003. Review. PubMed PMID: 24182706

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- a. Assuming client does not already have a full particle size test. Tests include, NMR LipoProfile, Lipoprint, Berkeley Heart Lab, Vertical Auto Profile, or the Lipoprotein Particle Profile.
  - i. Total cholesterol does not matter, need to look at types of cholesterol.<sup>33</sup>
  - ii. HDL particles should include high levels of HDL-2 particles. High level of HDL-3 particles are dangerous.
  - iii. Generally, HDL levels above 60 mg/dl is considered good, depends on HDL size though.
  - iv. LDL is generally thought best to be 129 mg/dl or below. 100 mg/dl for those at risk of heart disease and lower than 70 mg/dl for those at extreme risk. Again, depends on size of LDL particle composition.
  - v. LDL-A is good thought to be the good type of LDL and LDL-B is thought to be the small dangerous, hard, dense molecule that promotes atherosclerosis.
  - vi. Lp(a), low density apolipoprotein, are an independent risk factor for CVD.
2. Reduced refined carbohydrates and added sugars below 50g.
  - a. Eliminate added Sugar, Soda, Processed Carbs
  - b. Added sugars should account for no more than 10% of daily calorie intake. 54 grams in a 2000 kcal diet. Or about 70 grams for James. However since James has family history of CVD less than 10% would be ideal, or below 50g a day.<sup>34</sup>
3. Blood Pressure measurements.
  - a. Below 120 systolic / 80 diastolic is goal
4. C-Reactive Protein
  - a. Marker for inflammation, directly associated with CVD.
  - b. Simple test, obtain high-sensitivity test (hs-CRP)
  - c. Optimal CRP level is less than 0.8 mg/dl
5. Other ways to measure risk or reduced risk of CVD

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<sup>33</sup> Johns Hopkins Medicine, "The New Blood Lipid Tests—Sizing Up LDL Cholesterol," Johns Hopkins Health Alerts, last modified on June 13, 2008, [www.johnshopkinshealthalerts.com/reports/heart\\_health/1886-1.html](http://www.johnshopkinshealthalerts.com/reports/heart_health/1886-1.html).

<sup>34</sup> Ervin RB, Ogden CL. [Consumption of added sugars among U.S. adults, 2005-2010](#). NCHS Data Brief. 2013 May;(122):1-8. PubMed PMID: 23742909.

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- a. Fibrinogen tests, Clauss method or FiF (immune-precipitation functional intact fibrinogen)<sup>35</sup>
  - b. Serum Ferritin<sup>36</sup>
  - c. Homocysteine<sup>37</sup>
  - d. Coronary Calcium Scan
    - i. Cholesterol only makes up about 3% of arterial plaque, while calcium composes about 50% of plaque.<sup>38</sup>
6. Monitor blood glucose levels
- a. Family history of diabetes.

### When would you like them to return?

1 month

### How often would you like to see them?

At the start once a month, then every 3 months.

### Are any referrals necessary? Who will be included in your patient care team?

No referrals are necessary, would like client to obtain a different cholesterol tests. Patient can order tests on own or ask his primary care physician for these tests.

### How will you monitor progress?

Based on cholesterol tests, blood tests, blood pressure and changes in diet.

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<sup>35</sup> James J. Stec et al., "Association of Fibrinogen with Cardiovascular Risk Factors and Cardiovascular Disease in the Framingham Offspring Population," *Circulation* 102, no. 14 (2000): 1634-38.

<sup>36</sup> J.T. Salonen et al., "High Stored Iron Levels Are Associated with Excess Risk of Myocardial Infarction in Eastern Finnish Men," *Circulation* 86, no. 3 (1992): 803-11; Lawrence K. Altman, "High Level of Iron Tied to Heart Risk," *New York Times*, September 8, 1992.

<sup>37</sup> Moti Haim et al., "Serum Homocysteine and Long-Term Risk of Myocardial Infarction and Sudden Death in Patients with Coronary Heart Disease," *Cardiology* 107, no. 1 (2007): 52-56.

<sup>38</sup> S. Seely, "Is Calcium Excess in Western Diet a Major Cause of Arterial Disease?" *International Journal of Cardiology* 33, no. 2 (1991):191-98.

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