Building a Better Breakfast with High-Quality Protein and Produce

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November 20, 2013
Disclosure

• Advisor, Egg Nutrition Center
• Consultant:
  o Corn Refiners Association
  o McDonalds
  o Sargento
  o American Beverage Association
Objectives

• Describe the benefits of breakfast in promoting health and wellness

• Explain the advantages of increased protein at breakfast

• Communicate the satiety and weight management role of fruits and vegetables

• Create breakfast meals that incorporate more protein and fiber
Dietary Guidelines 2010

Nutrients of concern:

- Potassium
- Fiber
- Calcium
- Vitamin D
- Iron: Premenopausal women and adolescent girls
- Folate: Premenopausal women
- Vitamin B12: over 50 years old
Nutrients of Concern

Fruits and vegetables: potassium, fiber, folate
Eggs: vitamins D & B12, iron
Beef: vitamins B12 & iron
Pork: vitamin B12 & potassium
Dairy: calcium, vitamin D and potassium
Benefits of Breakfast

• Better cognitive function
• Weight management
• Satiety
• Lower risk of cardiovascular disease
• Lower risk of Type 2 diabetes mellitus
Breakfast & Cognitive Function

“Breakfast is associated with enhanced cognitive function in schoolchildren An internet based study” Appetite 2012 59:646–649
Breakfast & Cognitive Function

Review of 36 articles examining the effects of breakfast on in-class behavior and academic performance in children and adolescents

Results:
• mainly positive effect of breakfast on on-task behavior in the classroom
• suggestive evidence that habitual breakfast and school breakfast programs have a positive effect on academic performance with clearest effects on math grades in undernourished children
• Increased breakfast frequency consistently positively associated with academic performance

“The effects of breakfast on behavior and academic performance in children and adolescents” Frontiers in Human Neuroscience 2013, 7:1-28
Breakfast & Energy Intake

Methods:
12 men, normal BMI, regular breakfast eaters
• Breakfast (B) vs. no breakfast (NB)
• 250 kcal liquid preload 2.5 hours after breakfast
• ad libitum lunch 90 minutes after preload

Results
• Fullness lower; hunger and desire to eat higher in the NB condition immediately before preload,
• Energy intake at lunch 17% lower in the breakfast eaters

“High Caloric Intake at Breakfast vs. Dinner Differentially Influences Weight Loss of Overweight and Obese Women” Obesity e-pub July 2013
Breakfast, Heart Disease & Type 2 Diabetes

• 26,902 men in the Health Professionals Follow-up Study, 45 to 82 years old, initially free of CVD and T2D

• After 16 years,
  o 1527 incident CHD cases diagnosed
  o 1944 T2D cases documented

• Men who skipped breakfast had a
  o 27% higher risk of CHD
  o 21% higher risk of T2D

“Prospective Study of Breakfast Eating and Incident Coronary Heart Disease in a Cohort of Male US Health Professionals”
*Circulation* 2013 128:337-343

Breakfast:
A good time to eat fruit, vegetables & protein
Protein at Breakfast

“To achieve the two-fold to three-fold increase needed to stimulate protein synthesis, humans need to consume at least 25 – 30 g of protein containing a minimum of 2.5 g leucine per meal”

# Leucine “Requirements” vs. “Needs”

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Essential amino acid for substrate needs</td>
<td>• Leucine need = &gt;8 g/day</td>
</tr>
<tr>
<td>– RDA for leucine = &lt;3g/day</td>
<td>• Leucine signal requires</td>
</tr>
<tr>
<td>• Regulator of muscle protein synthesis and insulin signal pathway</td>
<td>– 2.5 to 3.0 g of dietary leucine</td>
</tr>
<tr>
<td></td>
<td>– ~30g of protein /meal</td>
</tr>
</tbody>
</table>
Typical Daily Protein Distribution

A skewed daily protein distribution fails to maximize potential for muscle growth.
Optimal Daily Protein Distribution

Repeated maximal stimulation of protein synthesis
→ increase / maintenance of muscle mass

Total Protein
90 g

~ 1.3-1.5 g/kg/day

maximum rate of protein synthesis

Catabolism

Anabolism

30 g
30 g
30 g

~ 1.3-1.5 g/kg/day
Protein at Breakfast:
Appetite and Energy Intake
Daily Addition of a Protein-rich Breakfast for Long-term Improvements In Energy Intake Regulation and Body Weight Management in Overweight & Obese ‘Breakfast Skipping’ Young People

Heather J Leidy, Heather A Hoertel, Steve M Douglas and Rebecca S Shafer
Start by Adding Protein at Breakfast

Stacking up the protein content of popular breakfasts:

- **33 Grams of Protein**
  - 1 Whole Egg + 1 Egg White
  - Canadian Bacon, 1 ounce
  - Low-fat Cheese, 1 ounce
  - English Muffin, ½
  - Melon, 1/2 cup
  - Tomato, 1 slice
  - Non-fat Milk, 1 cup
  - Total: 350 Calories

- **13 Grams of Protein**
  - Ready-To-Eat Whole-Grain Cereal, 1 cup
  - Non-fat Milk, 1/2 cup
  - Banana, 1 small
  - Orange Juice, 1/2 cup
  - Total: 330 Calories

- **12 Grams of Protein**
  - Pancakes, 2
  - Maple Syrup, 1 Tablespoon
  - Strawberries, ½ cup
  - Non-fat Milk, 1 cup
  - Total: 325 Calories

- **3 Grams of Protein**
  - Glazed Doughnut
  - Coffee, 1 cup
  - Cream, 1 Tablespoon
  - Sugar, 1 Teaspoon
  - Total: 295 Calories

Not all breakfasts are created equal when it comes to protein. Examine the protein content of four popular American breakfast options that are all similar in calories. While each of these breakfasts provides a similar amount of calories, the amount and type of protein provided varies significantly.
Eggs at Breakfast:
Appetite and Energy Intake
Consuming eggs for breakfast influences plasma glucose and ghrelin, while reducing energy intake during the next 24 hours in adult men

Joseph Ratliff\textsuperscript{a}, Jose O. Leite\textsuperscript{a}, Ryan de Ogburn\textsuperscript{a}, Michael J. Puglisi\textsuperscript{a},
Jaci VanHeest\textsuperscript{b}, Maria Luz Fernandez\textsuperscript{a,*}

\textsuperscript{a}Department of Nutritional Sciences University of Connecticut Storrs, CT 06269, USA
\textsuperscript{b}Department of Kinesiology, University of Connecticut, CT 06269, USA
Received 5 November 2009; revised 31 December 2009; accepted 6 January 2010
“Consuming eggs for breakfast influences plasma glucose and ghrelin, while reducing energy intake during the next 24 hours in adult men” Nutrition Research 2010 30:96–103
Benefits of Fruit & Vegetables

• May reduce risk of heart disease, high blood pressure and some cancers

• Low in calories: weight loss and maintenance

• Fiber: satiety and digestive health

• Vitamins and minerals: vitamins A & C, folate, potassium, magnesium

• Phytochemicals: anthocyanidins, lutein, lycopene, resveratrol, zeaxanthin
Fruits & Vegetables: Satiety and Weight Management
Fruits, Vegetables & Weight Loss

Methods:
80 overweight adults

• 3 individualized diet counseling sessions over 6 months
• diet prescription by a nutritionist with at least 2 fruit and 5 vegetable servings/day without a calorie restriction

Results

• 3 lbs. weight loss and 109 gram (3.8 oz) increase in fruit & vegetable intake
• increased intake of dietary fiber from fruits/vegetables was associated with a greater weight loss

“High intake of fruits and vegetables predicts weight loss in Brazilian overweight adults” Nutrition Research 2008 28:233–238
Low-Fat Diet + Fruit & Vegetables vs. Low-Fat Diet

Salad & Satiety

High Protein, High Fiber Diet & Weight Loss

Methods:
89 overweight or obese women randomized to either:
• Standard diet: Low-fat, high-carb diet (20% protein, 50% carbohydrate, 30% fat; 25 grams fiber)
• High-protein, high-fiber diet (30% protein, 50% carbohydrate, 20% fat; 35 grams fiber)
• No calorie restriction

Results:
• HPHF participants lost more weight (3 lbs), total fat (2 lbs) and truncal fat (1.5 lbs) than those on the standard diet
• Total cholesterol and LDL cholesterol significantly lower after the HPHF diet

Putting it on the Plate

Choose My Plate.gov
<table>
<thead>
<tr>
<th>Nutrition Facts</th>
<th>Made with plain nonfat yogurt</th>
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</thead>
<tbody>
<tr>
<td>385 calories</td>
<td></td>
</tr>
<tr>
<td>21 grams protein</td>
<td></td>
</tr>
<tr>
<td>7 grams fiber</td>
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</table>

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
<th>Made with Greek nonfat yogurt</th>
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</thead>
<tbody>
<tr>
<td>410 calories</td>
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</tr>
<tr>
<td>34 grams protein</td>
<td></td>
</tr>
<tr>
<td>7 grams fiber</td>
<td></td>
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</tbody>
</table>
Broccoli Omelet

Nutrition Facts

Served with slice of melon and slice whole wheat toast

305 calories
27 grams protein
6 grams fiber

www.fruitsandveggiesmorematters.org
Eggs Over Kale & Sweet Potato Grits

Nutrition Facts
Served with 8 oz glass of 100% grapefruit juice
380 calories
13 grams protein
4 grams fiber

www.fruitsandveggiesmorematters.org

Nutrition Facts
Served 8 oz glass of fat-free milk
375 calories
20 grams protein
4 grams fiber
Ham and Egg Breakfast Burritos

Nutrition Facts

Served with ½ cup berries

350 calories
27 grams protein
6 grams fiber

Used with permission: www.porkandhealth.org
Herbed Spinach Quiche Portabella Caps

Nutrition Facts
Served with 1/3 cup each strawberries and cantaloupe + ½ cup 2% fat cottage cheese
325 calories
30 grams protein
6 grams fiber

www.fruitsandveggiesmorematters.org
Apple-Cinnamon Oatmeal with an Egg Boost

Nutrition Facts
290 calories
15 grams protein
3 grams fiber

Nutrition Facts
Made with Greek nonfat yogurt, ½ apple & 1 Tbs. almonds
360 calories
22 grams protein
6 grams fiber

www.IncredibleEgg.org
Scrambled Eggs, Tomato, Mozzarella, & Basil Sandwich

Nutrition Facts

360 calories
22 grams protein
4 grams fiber

www.IncredibleEgg.org
Questions
Thank You

credible science
incredible egg