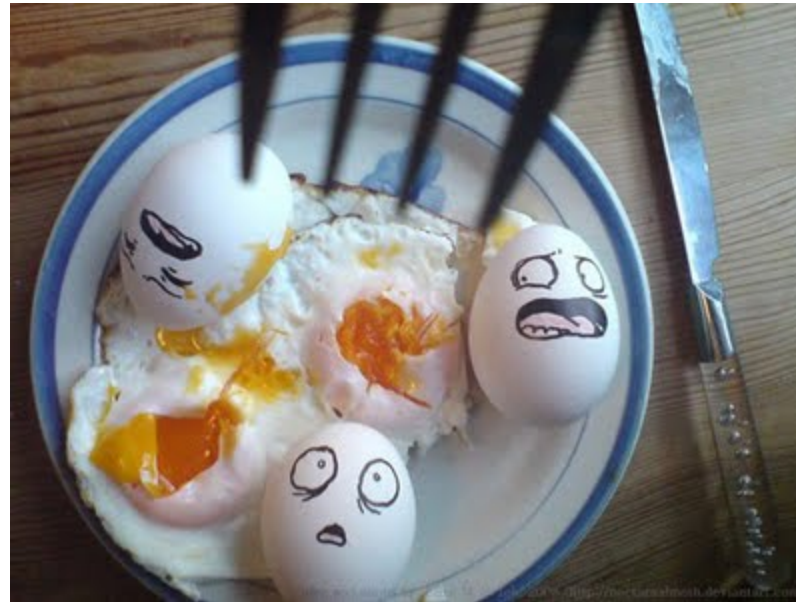


Eggs and Egg Substitutes



Presented by:
Lindsey Guskiewicz



Health Benefits

- Eggs are part of the meat food group, and provide many benefits to the body.
- They contain 13 essential vitamins and minerals:
 - Iron
 - Eggs contain a mixture of heme and non-heme iron that is easily absorbed by the body. This helps reduce the risk of anemia.
 - Choline
 - Breaks down homocysteine which is thought to increase the risk of heart disease.
 - Maintains brain function and sends messages from the brain to muscles.
 - Prevents birth defects and aids in brain development of fetus.
- Sizer, F., & Whitney, E. (2008). *Nutrition: concepts and controversies*. Belmont, CA: Thompson Higher Education
- The Incredible Edible Egg., (2010). *It's all in an egg!*. Retrieved from http://www.incredibleegg.org/images/website/documents/health-and-nutrition/egg-nutrients/its-all-in-an%20egg_11-05-08_.pdf

Health Benefits Con'd

- Folate
 - Helps prevent birth defects and may protect against heart disease.
 - Selenium
 - Works as an antioxidant, protects against some chronic diseases, and aids in metabolism.
 - Riboflavin
 - Provides energy for cells
 - Vitamin B12
 - Maintains nerve cells and normal digestion
 - Phosphorous
 - Energy metabolism, growth of tissues, acts as a buffer
- Sizer, F., & Whitney, E. (2008). *Nutrition: concepts and controversies*. Belmont, CA:Thompson Higher Education
 - The Incredible Edible Egg., (2010). *It's all in an egg!*. Retrieved from http://www.incredibleegg.org/images/website/documents/health-and-nutrition/egg-nutrients/its-all-in-an%20egg_11-05-08_.pdf



Health Benefits Con'd

- Pantothenic Acid
 - Helps to break down food and release its energy.
- Zinc
 - Aids enzymes in cells and in immune function.
- Vitamin A
 - Helps night vision, immune function, and tooth and bone formation.
- Vitamin D
 - Works with calcium to strengthen bones and teeth.
- Vitamin B6
 - Regulates immune function and amino acids.
- Calcium
 - Enhances bone structure, maintains blood pressure, aids in nerve transmissions, and helps to clot blood.
- Sizer, F., & Whitney, E. (2008). *Nutrition: concepts and controversies*. Belmont, CA:Thompson Higher Education
- The Incredible Edible Egg., (2010). *It's all in an egg!*. Retrieved from http://www.incredibleegg.org/images/website/documents/health-and-nutrition/egg-nutrients/its-all-in-an%20egg_11-05-08_.pdf

Health Benefits Con'd

- Eggs also contain high quality protein and lutein which can benefit the body.
 - Protein
 - Helps with satiety so you feel full longer, keeps you feeling energized, aids in maintaining a healthy weight, builds muscle strength and combats muscle loss, and supports fetal growth.
 - Lutein
 - Maintains eye health by reducing the risk of macular degeneration.
- Eat Right. American Dietetic Association, . (2010). *Keep an eye on eggs..* Retrieved from <http://www.eatright.org/Public/content.aspx?id=6442451732&terms=egg>
- The Incredible Edible Egg., (2010). *It's all in an egg!*. Retrieved from http://www.incredibleegg.org/images/website/documents/health-and-nutrition/egg-nutrients/its-all-in-an%20egg_11-05-08_.pdf



Health Risks

- Cholesterol
 - Although one egg contains 211mg of cholesterol, studies show the egg does not increase your risk of heart disease or stroke.
 - Consuming several eggs per day will nullify this benefit, and can be risky for the body.
- Improperly handled eggs have the potential to cause Salmonella Enteritidis.
 - One of the most common food-borne infections which occurs from ingesting contaminated foods such as raw or unpasteurized eggs.
 - Eggs can become contaminated through an infected hen laying eggs, preparation, or improperly cooking.
 - Symptoms include headache, nausea, diarrhea, vomiting, fever, and abdominal pain.
- Eat Right. American Dietetic Association, . (2010). *Keep an eye on eggs..* Retrieved from <http://www.eatright.org/Public/content.aspx?id=6442451732&terms=egg>
- Sizer, F., & Whitney, E. (2008). *Nutrition: concepts and controversies*. Belmont, CA:Thompson Higher Education

Reducing Health Risks

- To reduce the risk of Salmonella, consider using pasteurized eggs.
 - Pasteurizing involves heating eggs to a certain temperature to kill bacteria that is harmful to the body.
 - This process is similar to milk pasteurization.
 - Some shelled eggs and all egg products are pasteurized.
- Eat Right. American Dietetic Association, . (2010). *What are pasteurized eggs?*. Retrieved from <http://www.eatright.org/Public/content.aspx?id=6442453411&terms=egg+pasteurization>





Reducing Health Risks

- Prior to purchasing, choose a cold carton and inspect all eggs for cracks and dirt.
- Keep your eggs in the original packaging and in the coldest part of your refrigerator.
 - Raw eggs and hard boiled eggs will keep about 4 weeks.
- Thoroughly cook all eggs.
- Take extra precautions when preparing foods with raw eggs such as Caesar salad dressing, mayonnaise, ice cream, or eggnog.
 - Be sure these are prepared with a pasteurized egg product.
- Keep egg foods at low temperatures, only leave them out for up to 2 hours, and eat any leftovers within 2 or 3 days.
- Eat Right. American Dietetic Association, . (2010). *An excellent day for a safe egg*. Retrieved from <http://www.eatright.org/Public/content.aspx?id=3693&terms=egg>

Types of Eggs and Egg Substitutes

- Eggs and egg substitutes come in many different varieties such as:
 - Shell Eggs
 - Egg whites
 - Liquid egg substitute
 - Dried egg substitute
 - Frozen egg substitute



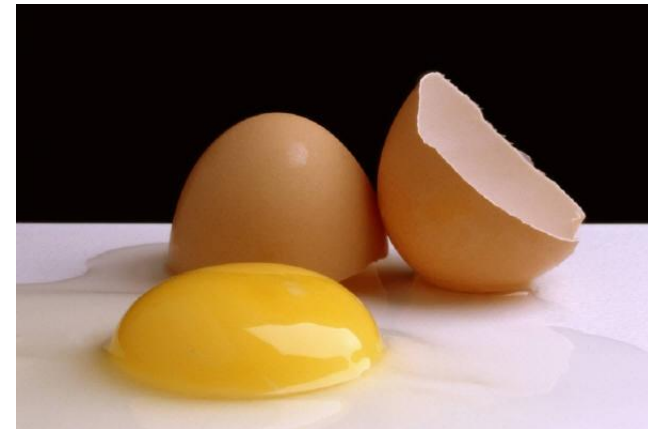
Shell Eggs

- One large shell egg is 71.5kcal, and costs about .12 - .20 cents.
- They are graded on quality using a system called candling.
 - AA –whites are thick and firm while yolks are round and clean in appearance, almost free of any defects.
 - A –Whites are still firm, but are of a lower quality than AA. Usually sold in grocery stores.
 - B- Whites are less firm and yolks are flat and wide. Usually made into egg substitutes.
 - If eggs do not meet the USDA's sanitation guidelines, they are considered defective and removed.
- Cengage Learning, . (Producer). (2009). *Diet analysis plus 10*. [Web]. Retrieved from <http://daplus10.cengage.com/DAPlus10/home.seam?cid=151782>
- USDA, Initials. (2010). *Shell eggs from farm to table*. Retrieved from http://www.fsis.usda.gov/PDF/Shell_Eggs_from_Farm_to_Table.pdf

Nutrient	Total Grams	Percent of Nutrients
Fat	4.97g	62.6%
Carbohydrate	0.39g	2.2%
Protein	6.28g	35.2%

Shell Egg Nutritional Facts

Nutrient	Amount per 1 shell egg
Saturated Fat	1.55g
Cholesterol	211.5mg
Omega 6	0.57g
Omega 3	0.02g
Riboflavin	.24mg
B6	0.07mg
B12	.64mcg



Nutrient	Amount per ¼ cup
Folate	23.5mcg
Vitamin D	0.06mcg
Vitamin A	70mcg
Calcium	26.5mg
Iron	0.92mg
Zinc	0.56mg

Cengage Learning, . (Producer). (2009). *Diet analysis plus 10*. [Web]. Retrieved from <http://daplus10.cengage.com/DAPlus10/home.seam?cid=151782>



Recommendations

- Consumers looking to maintain a healthy diet and weight should consider using shell eggs.
 - Compared to other egg products, raw shell eggs rank much higher in
 - B12
 - Folate
 - Vitamin A
- Consumers looking to lower fat and cholesterol intake may want to consider other egg products.
 - Shell eggs consist mostly of fats, some protein, and are very high in cholesterol.
- When choosing this product, selecting brands that have been pasteurized will reduce the risk of salmonella poisoning.

Egg Whites

- 2 egg whites contain 31.68 kcal, and cost about \$2.50 for 15 egg whites.
- The yolk or yellow part of the egg contains fat and cholesterol, whereas the white portion is cholesterol free.
- For every one whole egg, try substituting with 2 egg whites for a healthy alternative.
- Eat Right. American Dietetic Association, . (2010). *Keep an eye on eggs..* from <http://www.eatright.org/Public/content.aspx?id=6442451732&terms=egg> Retrieved

Nutrient	Total Grams	Percent of Nutrients
Fat	0.11g	3.1%
Carbohydrate	0.48g	6.1%
Protein	7.19g	90.8%

Egg White Nutritional Facts



Nutrient	Amount per 2 egg whites
Saturated Fat	0g
Cholesterol	0mg
Omega 6	0g
Omega 3	0g

Nutrient	Amount per 2 egg whites
Riboflavin	.29mg
B6	0mg
B12	.06mcg
Folate	2.64mcg
Vitamin D	0mcg
Vitamin A	0mcg
Calcium	4.62mg
Iron	0.05mg
Zinc	0.02mg

Cengage Learning, . (Producer). (2009). *Diet analysis plus 10*. [Web]. Retrieved from <http://daplus10.cengage.com/DAPlus10/home.seam?cid=151782>

Recommendations

- Buyers needing to lower their fat and cholesterol intake should consider using egg whites in place of shell eggs.
 - Egg whites contain zero saturated fats and cholesterol.
- Although this can be beneficial, they are lacking essential vitamins and minerals that an egg composes.
 - Very low in B12 and folate
 - Low in iron and zinc
 - Contain no vitamin D or A



Liquid Egg Substitute

- 1/4 cup of liquid egg substitute is equal to one shell egg and has about 52.71 kcal. Costs about \$3.90 for 32oz.
- Product is removed from its shell and pasteurized in a liquid form.
- Contains only the white portion of the egg.
 - Can be low or even free of cholesterol or fat.
- Contains more omega 3 and 6, calcium, iron, and zinc.
- The Incredible Edible Egg, . (2010). *Egg products*. Retrieved from <http://www.incredibleegg.org/egg-facts/eggcyclopedia/e/egg-products>

Nutrient	Total Grams	Percent of Nutrients
Fat	2.08g	37.1%
Carbohydrate	0.4g	3.2%
Protein	7.53g	59.7%

Liquid Egg Substitute Nutritional Facts

Nutrient	Amount per ¼ cup
Saturated Fat	.41g
Cholesterol	.63mg
Omega 6	.88g
Omega 3	.12g



Nutrient	Amount per ¼ cup
Riboflavin	.19mg
B6	0mg
B12	.19mcg
Folate	9.41mcg
Vitamin D	0mcg
Vitamin A	11.3mcg
Calcium	33.26mg
Iron	1.32mg
Zinc	.82mg

Cengage Learning, . (Producer). (2009). *Diet analysis plus 10*. [Web]. Retrieved from <http://daplus10.cengage.com/DAPlus10/home.seam?cid=151782>



Recommendations

- Consumers looking to lower their fat intake should consider using liquid egg substitute.
 - The product tends to be low in saturated fats, and contains half the amount of cholesterol of a shell egg.
- Compared to other egg products, they are high in:
 - Calcium
 - Iron
 - Zinc
 - Omega 3
 - This is especially important because people tend to have a diet low in omega 3.
- Contains no vitamin D
 - Most vitamin D is obtained from sunlight.
 - Since very little vitamin D is consumed from foods, this should not be a reason to rule out this product.
- This product is pasteurized, making it free of salmonella and other bacteria.

Dried Egg Substitute

- About 2.5 Tbsp mixed with 2.5 Tbsp warm water is equivalent to one whole raw egg.
 - Contains 79 kcal, and costs about \$13 for 4oz.
- Produced since the 1930's, dried egg products are used in many settings such as homes, commercially, in the military, and convenience food locations.
 - Today, the dried egg process has greatly improved the quality and taste by incorporating a multi-stage drying technique.
- Should be stored in a dark, dry area.
- Must be refrigerated after opening.
- The Incredible Edible Egg, . (2010). *Egg products*. Retrieved from <http://www.incredibleegg.org/egg-facts/eggcyclopedia/e/egg-products>

Nutrient	Total Grams	Percent of Nutrients
Fat	5.44g	63.8%
Carbohydrate	0.66g	3.4%
Protein	6.29g	32.8%

Dried Egg Substitute Nutritional Facts

Nutrient	Amount per 2.5 Tbsp
Saturated Fat	1.69g
Cholesterol	227.77mg
Omega 6	.61g
Omega 3	0.01g
Riboflavin	.2mg
B6	0.05mg
B12	.52mcg

Cengage Learning, . (Producer). (2009). *Diet analysis plus 10*. [Web]. Retrieved from <http://daplus10.cengage.com/DAPlus10/home.seam?cid=151782>



Nutrient	Amount per 2.5 Tbsp
Folate	22.71mcg
Vitamin D	0.65mcg
Vitamin A	36.52mcg
Calcium	30.68mg
Iron	0.9mg
Zinc	0.7mg



Recommendations

- From a nutritional view, I would not recommend dried eggs to consumers.
 - Dried eggs have very high amounts of saturated fat and cholesterol when compared to other egg products.
 - They are very low in riboflavin, but contain very high amounts of vitamin D.
- From a convenience standpoint, dried eggs can be easily transported, do not require refrigeration, and can be kept for long periods of time.
 - They are a great product for food storage.
 - Still allows the consumer the benefit of a healthy egg choice when traditional egg products are not an option.
- This product is pasteurized, making it free of salmonella and other bacteria.

Frozen Egg Substitute

- $\frac{1}{4}$ cup is equal to one raw egg and contains 96 kcal. Costs about \$10 per $\frac{1}{2}$ gallon.
- Can be purchased in many different varieties such as egg whites only, yolks only, whole eggs, and blends.
- Can be enhanced with milk, salt, sugar, or corn syrup.
 - During the freezing process, these additional ingredients prevent the yolk from turning into a gelatin form.
- When ready for use, these products can be thawed in the refrigerator or by running the eggs under cold water.
 - Must be used within 3 days after thawing.
- The Incredible Edible Egg, . (2010). *Egg products*. Retrieved from <http://www.incredibleegg.org/egg-facts/eggcyclopedia/e/egg-products>

Nutrient	Total Grams	Percent of Nutrients
Fat	5.44g	58.8%
Carbohydrate	1.92g	9.2%
Protein	6.67g	32.0%

Frozen Egg Substitute Nutritional Facts

Nutrient	Amount per ¼ cup
Saturated Fat	1.16g
Cholesterol	1.2mg
Omega 6	3.71g
Omega 3	0.04g
Riboflavin	.23mg
B6	0.08mg
B12	.2mcg

Cengage Learning, . (Producer). (2009). *Diet analysis plus 10*. [Web]. Retrieved from <http://daplus10.cengage.com/DAPlus10/home.seam?cid=151782>



Nutrient	Amount per ¼ cup
Folate	9.6mcg
Vitamin D	0mcg
Vitamin A	6.6mcg
Calcium	43.8mg
Iron	1.19mg
Zinc	0.59mg



Recommendations

- Consumers looking for a convenient egg product that that is low in cholesterol may consider frozen eggs.
 - Although frozen egg products are very low in cholesterol, they contain a large amount of saturated fats.
 - This should be taken into consideration by the consumer, and may sway their purchasing decision based on their desired diet.
- Compared to other egg products, frozen eggs have much higher amounts of omega 6 and calcium.
 - Omega 6 is already usually plentiful in diets. Eating too much omega 6 can lower good HDL cholesterol which can be detrimental to the body.
- This product contains low amounts of folate and no vitamin D.
- Frozen eggs are pasteurized, making them free of salmonella and other bacteria.

Overall Recommendations

- Eggs and egg substitutes have many substantial health benefits, and with proper handling, little health risks.
 - Because of these benefits I would recommend individuals consume egg products, but in moderation.
 - Eggs contain large amounts of cholesterol, eating one per day may not increase the risk of heart disease or stroke.
 - Consuming several eggs per day can be detrimental to one's health and may increase these risks.
 - The health of an individual will determine which product is best suited for their diet.
 - In general, whole foods, such as shell eggs, are more beneficial to the body and tend to provide more nourishment.





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- Eat Right.American Dietetic Association, . (2010). *What are pasteurized eggs?*. Retrieved from <http://www.eatright.org/Public/content.aspx?id=6442453411&terms=egg+pasteurization>



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- The Incredible Edible Egg, . (2010). *Nutrient*. Retrieved from <http://www.incredibleegg.org/egg-facts/eggcyclopedia/n/nutrient>
- USDA, Initials. (2010). *Shell eggs from farm to table*. Retrieved from http://www.fsis.usda.gov/PDF/Shell_Eggs_from_Farm_to_Table.pdf