

# Eggs: Organic, Enhanced, Liquid, Frozen, or Dried—What to Consider

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EGGS ARE AN evolving hot topic. In 2013, the American Heart Association changed its statute on cholesterol intake, citing insufficient evidence to support the link between dietary cholesterol intake and heart disease.<sup>1</sup> The US Department of Agriculture (USDA) and Department of Health and Human Services recently released the Dietary Guidelines for Healthy Americans, 2015 for review and comment. These new guidelines followed suit. The new 2015 projected guidelines differ from the current recommendations of the Dietary Guidelines of 2010, the advisory panel now states cholesterol is “not a nutrient of concern” and that the cholesterol in foods that we eat does not influence higher blood cholesterol as previously believed.<sup>2,3</sup> These Dietary Guidelines for Healthy Americans, 2015 are not finalized, and it is hard to say what will be in the final release, but they are to reflect the most recent scientific-based evidence about the foods that we eat.

Many people are feeling more liberated in their use of eggs and are including them in a variety of ways throughout the day. The International Food Information Council Foundation says a full 57% of Americans actively try to consume more protein.<sup>4</sup> Protein is an exceptionally important nutrient for dialysis patients, and eggs are an easy to prepare and easy to digest source for this patient population. Protein-energy malnutrition is very common among patients receiving maintenance dialysis. Evidence indicates that nutritional status of maintenance dialysis patients does improve with an increase in dietary protein intake.<sup>5</sup> Eggs are the perfect addition to a healthy balanced renal diet.

Eggs are all-natural and packed with a number of nutrients. One egg has 13 essential vitamins and minerals in varying amounts, high quality protein, and antioxidants, all in approximately 70 calories.<sup>6</sup> All eggs are good sources of vitamin D and protein, which means that the content is

10% or more of the daily value for that nutrient.<sup>7</sup> The protein efficiency ratio is the most widely used procedure for determining quality of protein. The protein in eggs shows maximum protein efficiency ratio.<sup>8</sup> See [Table 1](#) for nutrient breakdown of 1 large fresh egg.<sup>9</sup>

The market of eggs and specialty egg products is expanding. The USDA identifies all shell eggs as natural. Some other recognized egg types explored in this product update are: nutrient-enhanced eggs and organic eggs.

Nutrient-enhanced eggs are eggs that are produced by hens fed a special diet that may include items such as flaxseed, marine algae, or fish oils. The declaration of omega-3 fatty acids (omega-3) must also state the amount present. One egg naturally contains an average of 30 mg of omega-3, and eggs that are omega-3-enhanced contain 100 to 600 mg per egg.<sup>7</sup> Previous research has shown

**Table 1.** Nutrient Content of a Whole Large Egg, Fresh (50 g)

Nutrient	Whole Large Egg (50 g)
Energy (kcal)	72
Protein (g)	6.3
Carbohydrate (g)	0.4
Total fat (g)	4.8
Monounsaturated fat (g)	1.8
Polyunsaturated fat (g)	1
Saturated fat (g)	1.6
Trans fat (g)	0
Cholesterol (mg)	186
Choline (mg)	147
Riboflavin (mg)	0.2
Vitamin B12 (mcg)	0.4
Folate (mcg)	24
Vitamin D (IU)	41
Vitamin A (IU)	270
Vitamin B6 (mg)	0.1
Thiamin (mg)	0
Vitamin E (mg)	0.5
Selenium (mcg)	15.4
Phosphorus (mg)	99
Iron (mg)	0.9
Zinc (mg)	0.7
Calcium (mg)	28
Sodium (mg)	71
Potassium (mg)	69
Magnesium (mg)	6

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**Table 2.** Nutrient Content of Omega-3 and Vitamin E–Enhanced Egg Products, Based on Single Serving Amount Provided on Product Label

Product Name	Calories	Protein (g)	Fat (g)	Potassium (mg)	Sodium (mg)	Phosphorus	Omega-3 (mg)	Vitamin E
Full Circle Grade A Large White Eggs 660 mg Omega-3	72*	6.3*	4.8*	69*	71*	99 mg*	660	0.5 mg*
Organic Valley Large Brown Free Range Eggs 225 mg Omega-3	70	6	4	69*	70	99 mg*	225	10%
Organic Valley Extra Large Brown Free Range Eggs 225 mg Omega-3	70	7	4.5	111*	80	77 mg*	225	10%
Land O'Lakes Large Brown Eggs	70	6	5	70	70	10%	160	2.6%
Farmers Hen House Cage Free Omega-3 Large Eggs	70	6	5	69*	70	99 mg*	NA	NA
Egg·Land's Best Cage Free Large Brown Eggs	60	6	4	69*	65	8%	115	25%
Egg·Land's Best Hard Cooked Peeled Eggs	60	5	3.5	69*	55	99 mg*	NA	20%

The entries in italic indicate the nutrient that has been enhanced.

Vitamin E % indicates the % of daily value (DV). The DV for vitamin E is 30 international units (IU).

\*Indicates US Department of Agriculture value for a whole, fresh, large egg as stated in Table 1.

that hens fed feed containing marine algae, fish oils, or flaxseed have eggs that are “tainted” with a fishy taste. Hens fed chia seeds have no fishy taste detected, and such eggs would be good sources of omega-3 for consumption.<sup>10</sup> Vitamin E–enhanced eggs must contain more than 10% of the daily value or 3 international units of vitamin E.<sup>6</sup> Table 2 summarizes a list of the omega-3–enhanced egg products researched in this product update.<sup>11–14</sup> Product manufacturers were contacted to obtain nutrient information not included on the printed label. Organic Valley noted the potassium and phosphorus value of the products listed have not been tested, but they would not differ significantly from the USDA values of the standard fresh egg, the USDA values were included for comparison.<sup>9</sup> The Full Circle product did not have a nutrition label on the carton or available online. USDA values were again used as the only significant

difference in that egg versus the conventional egg would be in the omega-3 content, which was labeled appropriately. Farmers Hen House was contacted multiple times with no response on value of omega-3 in their omega-3–labeled product.

Eggs are now among the fastest growing food products in the US organic sector.<sup>15</sup> Eggs labeled organic must be laid by cage-free, free-roaming hens that are raised on certified organic feed and have access to the outdoors.<sup>7</sup> Hens that live in these conditions may have different diets that include increased pasturing, and this could change the omega-3 value of the egg and would be labeled as such. Overall, there is no significant difference in the nutritional value of an organic versus a conventional egg.<sup>16</sup>

Alternative egg products such as refrigerated liquid and dried eggs are also becoming more available and more

**Table 3.** Nutrient Content of Refrigerated Liquid Egg Products, Based on Single Serving Amount Provided on Product Label

Product Name	Calories	Protein (g)	Fat (g)	Potassium (mg)	Sodium (mg)	Phosphorus
All Whites	25	5	0	75	75	
Better'N Eggs	30	6	0	120	120	X
Egg Beaters Original	25	5	0	70	90	X
Egg Beaters 100% Egg Whites	25	5	0	60	75	
Egg Beaters Florentine	30	4	0.5	80	150	X
Egg Beaters Southwestern	20	4	0	65	125	X
Egg Beaters Three Cheese	25	4	0.5	70	135	X
Egg Beaters Original Smart Cups	60	11	0	170	220	X
Egg·Land's Best 100% Liquid Egg Whites	25	5	0	75	75	
Egg·Land's Best Scrambled Eggs	140	14	8	170	270	X
Egg·Land's Best Cracked & Ready	60	6	3.5	65	60	

X indicates a phosphorus-containing ingredient, or phosphorus additive was listed in the ingredients of the product.

**Table 4.** Nutrient Content of Dried Egg Products, Based on Single Serving Amount Provided on Product Label

Product Name	Calories	Protein (g)	Fat (g)	Potassium (mg)	Sodium (mg)	Phosphorus
King Arthur Dried Egg Whites	15	3	0	NA	50	NA
DEB El Just Whites	12	3	0	0	51	NA
Rose Acre Farms Dried Egg Whites (Sportprotein)	45	10	0	NA	150	NA

NA indicates that the information was not available.

common for household use versus primarily commercial use. These products are comparable to shell eggs in nutrition, flavor, and function. Thirty percent of all eggs in the United States go into egg products, and 3 billion pounds of all types of egg products are produced each year.<sup>17</sup> Table 3 summarizes a list of refrigerated liquid egg products and their nutrient breakdown.<sup>18–20</sup> Refrigerated liquid egg manufacturers included in this product update were contacted, and exact phosphorus values were not available. The “X” in the phosphorus column indicates that another phosphorus-containing ingredient was noted and would therefore increase the value of phosphorus to greater than the USDA value of 99 mg provided in a fresh large egg.<sup>9</sup> One hundred percent egg white products are pure and would be acceptable alternatives for dialysis patient use.

Dried egg products are not readily available in stores. Table 4 summarizes a few products that were located online and their nutritional breakdown. The King Arthur and DEB El Just Whites dried egg white products researched appear to be 100% pure egg whites.<sup>21,22</sup> These products are most often used in baking but also conceivably could have a place as an alternative protein supplement. One hundred percent egg white products do not typically have phosphorus additives in them and are a more pure choice. The Rose Acre Farms Dried Eggs Whites is a protein supplement marketed with 100% pure egg whites and 80% pure protein.<sup>23</sup> The ingredient list was not available online. Manufacturer contact was made multiple times, and no response was received regarding the potassium and phosphorus content of this item.

Frozen egg products in their simple state are also hard to find in regular retail stores. Their market is more to restaurants and schools, and those commercial products will not be covered in this product update. Frozen eggs are usually whole egg products, and only one retail option was found. Timber Ridge Farms Scrambled Egg Patties are available online through Walmart.com and stocked in very few Walmart locations. This product contains 60 calories, 4-g protein, 4-g fat, and 150 mg of sodium per serving.<sup>24</sup> There was no potassium or phosphorus information available, but other phosphorus-containing ingredients were listed; therefore, the value of phosphorus would be to greater than the USDA value of 99 mg provided in a fresh large egg.<sup>9</sup>

Frozen eggs in the premade breakfast product form are available in a wide variety of retail stores nationwide. These products include but are not limited to Eggo Breakfast Sandwiches, Special K Flatbreads, Jimmy Dean Delights, Breakfast Bowls, Toaster Scrambles, Bob Evans Biscuits, Red Baron Scrambles, and Bellatoria Sunday Brunch. These products when reviewed were significant sodium sources and had numerous phosphorus-containing ingredients and/or phosphorus additives present. This category of premade frozen egg products is not recommended for consumption by the dialysis patient population due to these ingredients.

Recently, avian influenza has disrupted egg supplies, and eggs may no longer be the cheapest animal protein on the market. The USDA estimates that 50 million birds have been affected. Seventy percent of these were laying hens and to mitigate the virus, all these birds had to be sacrificed. This process left a shortage of eggs available for wholesalers to purchase and higher prices for consumers at supermarkets. The price index for eggs, which tracks the average national increase people have to pay, rose by almost 20% in June 2015 alone.<sup>25</sup>

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