

# Cooking Egg Free

There are many reasons people want to cook egg free. Let's explore them and discuss how to cook egg free!

## Allergies

Eggs are one of the Food Allergen Labeling and Consumer Protection Act (FALCPA) nine allergic causing foods along with milk, fish and shellfish which is why the Food and Drug Administration requested via the FALCPA that food manufacturers list in bold print if egg is an ingredient of a food product.<sup>i</sup> Milk is #1 most common allergy in kids, #2 is eggs.<sup>ii</sup>

Symptoms include skin inflammation (most common), nasal congestion, cramps, nausea and vomiting, asthma like symptoms and anaphylaxis.<sup>iii</sup> Egg allergies also put you more at risk for having milk allergies.<sup>iv</sup>

## Cholesterol

Heart disease is the number one killer of both male and female<sup>v</sup> Americans. Medical intervention<sup>vi</sup> such as medical errors and drug interactions is the third leading cause of death, and stroke is the number four. High cholesterol is a leading factor in heart disease and stroke and with treatment for those diseases come the risk of medical intervention deaths. The yolk is concentrated fat and cholesterol therefore it coats our red blood cells and causes our blood to thicken.<sup>vii</sup> Other risks from cholesterol caused artery constriction is hearing loss, kidney failure,<sup>viii</sup> liver cancer,<sup>ix</sup> memory loss, and for men, impotence.<sup>x</sup>

One extra large egg has 208 mg of cholesterol and 5.33 grams of fat.<sup>xi</sup> The Cleveland Clinic recommends that Americans consume no more than 200 mg of cholesterol per day.<sup>xii</sup> So eliminating eggs in cooking is critical due to their high cholesterol content.

## Calories and cost

	<b>3 T applesauce + 1/2 tsp baking soda + 1 tsp vinegar</b>	<b>Egg (1)</b>
Calories	12	72
Fat (grams)	0	5
Cholesterol (mg)	0	<b>186</b>
Fiber (g)	1	0
Price		<b>HIGH!!</b>

Applesauce is just one of many egg substitutes available. The above chart provides a calorie and cholesterol comparison. You can see that the egg substitute saves calories and fat and costs *a fraction* of what an egg does. Also, animal products like eggs have no fiber and some egg substitutes, like applesauce, do contain essential fiber.

## Egg Contaminants

There are dangers inherent with egg handling that can be avoided with safer egg substitutes.

## Salmonella

*Salmonella* infection usually occurs when a person eats food contaminated with feces of animals or by humans carrying the bacteria.<sup>xiii</sup> According to the Centers for Disease Control (CDC) 1.2 million fall ill in the US with 19,000 hospitalizations and 450 deaths per year from Salmonella. 5% of Salmonella cases are antibiotic resistant.

The Egg industry funded research on Salmonella and found that Salmonella can survive in eggs scrambled over easy and sunny side up.<sup>xiv</sup> Purdue University research found it can survive being cooked in omelets and French

toast and eggs boiled up to 8 minutes. FDA estimates that 142,000 Americans are sickened each year by salmonella tainted eggs.<sup>xv</sup> The CDC estimates that for every confirmed case of Salmonella, another 38 slip through undiagnosed.<sup>xvi</sup>

The use of slaughterhouse by products as food for hens concentrates toxins so the egg whites have 20 times higher mercury than yolks do.<sup>xvii</sup>

Just the use of antibiotics in our food supply is a concern to scientists. 80% of all antibiotics in the U.S. are given to animals to make them grow faster and stay healthy in crowded facilities and cages, not dosed to humans to make them recover from infections or disease. Since 1993, when the feeding of antibiotics to animals on factory farms skyrocketed, the number of people *dying from infections* acquired in hospitals in the United States jumped from 13,000 to 100,000 *per year*.<sup>xviii</sup> Many people, therefore, forgo animal products due to the extensive antibiotic overuse and resulting bacteria resistance seen growing in humans.

## **Cancer**

### **High levels of choline**

Harvard Medical School studied thousands of men to see if there was anything in their diet that could be associated with a resurgence in their prostate cancer.<sup>xix</sup> Compared to men who ate hardly any eggs, there was a twofold increased risk of prostate cancer progression with men consuming the most eggs.<sup>xx</sup> Even men who only ate an egg a day had a twofold risk of prostate cancer progression.<sup>xxi</sup> The only thing worse was poultry consumption which caused a fourfold increased risk of prostate cancer progression.<sup>xxii</sup>

One reason for the connection between eating even just one egg a day and prostate cancer is high dietary choline in eggs.<sup>xxiii</sup> Egg consumption is a determinant of plasma choline (choline levels in the blood) and higher plasma choline is associated with greater risk of prostate cancer.<sup>xxiv</sup> Malignant prostate cells have higher plasma choline levels than healthy cells. So higher levels of choline may increase the risk of getting prostate cancer and then having it spread and causing death.<sup>xxv</sup>

## **Convenience**

Egg substitutes require no refrigeration so you never run out! They are not breakable so no special handling from the store is required. Egg substitutes are plant based so there is no risk of injury or death from salmonella like with eggs.<sup>xxvi</sup> No kitchen decontamination is needed because feces covered eggs are not handled before cooking other products.

## **Cruelty**

Many people will not eat eggs because of the treatment of the animals. 90% of hens who lay the eggs are confined in wire cages their entire lives, stacked six high so the feces of the animals above them rains down on them. There is no room to spread wings even a little and they are so close they are constantly touching each other which is stressful.

To prevent peck injuries from the unnatural confinement, hens have part of their sensitive beak removed without anesthesia. Without their beak eating and communication is difficult. Beaks serve like fingers for chickens so now they are severely deformed. Respiratory infections in hens and humans in the facility are common due to the uric acid/dust/feather debris in the air and this and other injuries are not treated. Even “cage free” birds have their beaks cut off.<sup>xxvii</sup>

Male baby chickens are not needed for meat or egg production so they are put into water filled trash cans and slowly drowned by the weight of those thrown on top of them or are put on a conveyer and are sent alive into a spinning blade and ground up alive.<sup>xxviii</sup>

## Cage Free Egg Myth

Cage free just means the hens must have access to outdoor areas, it doesn't specify how much time they must be allowed to spend outside or how much space they should be given. So a 2'x2' patch outside for thousands of hens housed in a warehouse is adequate.<sup>xxxix</sup>

Regardless of housing method, female chickens are killed when their egg output declines, but because their bodies are so spent from the endless reproduction cycle they are killed and ground up into fertilizer after two years. A chicken's life expectancy in the wild is typically 10 years.<sup>xxx</sup> They suffer the same all weather terror filled ride to the slaughterhouse where they are subjected to the same "errors" during the killing process as all other chickens.<sup>xxxi</sup>

## Eliminating Eggs from the diet



### Hidden Eggs

The Food Allergen Labeling and Consumer Protection Act (FALCPA), otherwise known as the "plain language" labeling law, requires that the 9 top allergens, including eggs, be declared on food labels using easily recognizable names.<sup>xxxii</sup> The law does NOT address the use of advisory labeling, including statements describing the potential presence of unintentional ingredients in food products resulting from the food manufacturing process.<sup>xxxiii</sup> Manufacturers can but do not have to put the allergen in BOLD for easy identification.

FALCPA's labeling requirements do not apply to restaurants or foods provided by a retail food establishment that are placed in a wrapper or container in response to a consumer's order.<sup>xxxiv</sup> Products exempt from plain English labeling rules: foods that are not regulated by the FDA, cosmetics and personal care products, prescription and over-the-counter medications or supplements, pet food, toys and crafts.<sup>xxxv</sup>

### Egg free products

#### Mayo Substitutes -egg and cholesterol free

<p><b>Vegenaise-Miracle Whip like</b></p> 	<p><b>Vegenaise</b> Kosher &amp; Gluten-Free. Refrigerated in the health food area of most chains, like near refrigerated tofu.</p>	<p><b>Hellmann's Plant Based (is vegan)</b></p> 	<p><b>Hellmann's Vegan</b> All major chains carry but not all stores in a chain might.</p>
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You can even make your own mayo substitute with Japanese Tofu (Mori Nu) that works great for dishes that have spices because the Mori Nu really has no flavor but is a binder/moistener. Many folks use a 50/50 blend of homemade Mori Nu and storebought mayo to provide more mayo like flavor but with less oil. Mori Nu recipe online!<sup>xxxvi</sup>

### Baking Egg Free

One easy way to find an egg free recipe is to look for a vegan version of the recipe as the egg substitution will have been calculated for you. Otherwise you will probably either substitute with a puree or a starch. First you must determine what the egg is doing for you in the recipe so you can eliminate it!

### Egg Summary:

Water constitutes about 85% of the weight of an egg.<sup>xxxvii</sup> A single large egg without the shell weighs 1.55 ounces (43.94 grams). If you take 85% of that number, you get 1.32 ounces (37.35 grams) as the water content.<sup>xxxviii</sup> This

works out to be 2 tablespoons and 2 teaspoons of moisture per large egg where 1 tablespoon is .5 oz and 1 teaspoon is .16 oz.

So to make it easy, just round up to **3 tablespoons of moisture per large egg**.

### **Eggs have several purposes in baked goods:**

**Binders**-like in cornbread. Any starch substitute should work or the flax seed substitute.

**Leavening agent**-(like in cakes and cookies). If a recipe does not contain Baking Powder or Baking Soda or has egg whites then this is the egg's purpose. **The baking powder/baking soda vinegar substitutions work best.** Remember, a leavener will also tenderize a product so keep that in mind when gluten formation is a consideration.

**To provide moisture** (like in [Cookies](#), [Muffins](#), [Quick Breads](#)). If there are little other moisture sources other than an egg in a recipe then this is probably the egg's purpose. So 3 tablespoons of applesauce, mashed banana, shredded zucchini, cooked mashed sweet potato and similar substitutes should work.

**Drying Agent**-the protein in an egg acts as a drying agent. So use a starch based substitute. Egg whites have twice the protein content as egg yolks so recipes with egg whites will need less moisture substituted.

**Gluten weakener**-egg yolks coat gluten proteins and prevent them from forming long, strong strands, weakening gluten.<sup>xxxix</sup> In this way the egg yolk is acting as a tenderizer. Starches tenderize so a starch based substitute will work.

**Default Egg substitutes**-2 tablespoons ground flax seed+3tablespoons water+1/2 teaspoon baking soda+1 teaspoon vinegar

OR 3 tablespoons puree (like applesauce) + 1/2 teaspoon baking powder.

The above two combinations provide moisture, leavening/lift and binding which are the three most common functions of an egg in a recipe.

To provide color-to get yellow, use a pinch of Turmeric (like mustard does!)

### **Baking Basics**

**Baking soda** needs an acidic ingredient to react with to release carbon dioxide, the gas that is released in small bubbles to give the baked goods their **lift**. Acidic ingredients in baking are molasses, honey, citrus juice, and vinegar. Use baking soda as specified in your recipe. Too much will produce flat baked goods and leave a metallic taste in your cakes or cookies. Added to items like pancakes where a little browning of the product is desired in addition to its ability to lift.

**Acidic ingredients**-do not skip because needed for lift and you will NOT taste vinegar in the recipe. Citrus juices are more acidic than vinegar so if a recipe calls for lemon juice and you want to substitute with vinegar, you may need to add a bit more vinegar to compensate.

**Baking powder** serves the same purpose as baking soda yet is already mixed with the acidic ingredient needed to produce carbon dioxide when baking. Old baking powder will produce flat cakes and cookies. Baking powder will provide more lift than the baking soda/acid option.

When the recipe calls for baking powder and baking soda, make sure to use both as they are serving different purposes!

### **Pie crusts**

When you want to maximize gluten, a moderate amount of water is ideal.<sup>xi</sup> Flaky and tender pastry doughs are better off thirsty which is why recipes tell you to dribble water into the dough drop by drop; it takes just a little too much water to create excess gluten and a tough piecrust.<sup>xii</sup> Stirring, kneading, folding, mixing all help gluten stretch and organize itself into a network. The more you mix, the stronger the gluten becomes.<sup>xiii</sup>

Blend flour and fat first. **Then if water is needed add JUST enough**, 1 teaspoon at a time and work dough as little as possible to incorporate water. Water encourages gluten formation and defeats the flakey effect desired. Let pie refrigerate 30 minutes before cooking- If the fats melt before they're in the oven, they are absorbed into the flour, and any chance of producing a flaky pie crust is lost.<sup>xliii</sup>

**Best egg substitute for pie crusts:** 2 Tablespoons water+2Tablespoons flour +1/2 tablespoon shortening + ½ teaspoon baking powder.<sup>xliv</sup>

### Cakes/Cupcakes

Sugar and starch egg replacers work as binders by using long chains of sugars known as polysaccharides. These types of compounds make batters and doughs excessively gummy so they clump together and often result in a denser, chewier baked item. **Sugar and starch egg replacers don't work in cakes**, where you need to build a reinforcing structure and have a means of trapping rising CO2 and steam. Since polysaccharides hold onto excess water, they're going to act as tenderizers which will result in cakes that rise and crash; exactly the opposite of what we want. **So do not use starches as an egg replacer in cakes.** Ground flax seed mixture may be the best option.<sup>xlv</sup> If using a box cake mix the easiest is to OMIT all eggs, water and oil and instead add ONLY 8 ounces of any kind of soda pop. Batter will be thick, cook as package calls for. The sodapop provides the moisture and lift. Regardless of WHICH egg replacer is used, you must reduce the moisture (ie make the batter thicker) to get the cake to lift like you want.

### Egg Free Cake Troubleshooting

Cake Condition	Explanation	Fixing Options
Sank in the middle	Usually caused by batter being too thin, lack of leavening power or excess sugar robbing water from gluten. Can also be caused by excessive fat.	Reduce water or sugar content. Increase baking powder and baking soda. Reduce fat content
Didn't rise at all	Usually caused by batter being too thin or lack of leavening power.	Reduce water content. Increase baking powder and baking soda.
Too Dry	Usually caused by excessive baking time or lack of water and/or fat.	Decrease baking time. Add additional water and/or fat

### Coffee Cake

Pureed Mori Nu *can* be used as an egg substitute-3 tablespoons per egg. However, it tends to make baked goods dense or heavy. It is, however, a good substitute in Coffee Cake, especially if making the recipe from Bisquick! Soft and moist!

### Cookie tips

Want chewy cookies? Use brown sugar or molasses. Thick sweeteners like brown rice syrup, sorghum syrup and molasses have longer chains of sugar molecules that bind more aggressively to water which results in a more moist and chewy dessert. So think texture not flavor when selecting your sugar.

Some bakers call for brown sugar in their recipes. Brown sugar is just sugar with a little bit of molasses added. Molasses also is acidic which can increase leavening, which also tends to decrease flattening in a cookie.<sup>xlvi</sup>

**Best egg substitute:** 2 tablespoons flax seed+3tablespoons water+1 teaspoon baking soda+1 teaspoon vinegar. In many recipes like peanut butter cookies, 3 tablespoons applesauce + 1 teaspoon baking soda+1 teaspoon vinegar works well.

**Quick breads (which includes pancakes and waffles):** Best egg substitute: 3 tablespoons puree (like applesauce) + 1 teaspoon baking soda+1 teaspoon vinegar. For pancakes and waffles the ground flax mixture also works well but unless using whole wheat flour you will see the flecks of flax seed against the white flour. The flax mixture also works well in muffins.

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- x Caldwell B. Esselstyn, Jr., M.D., Prevent and Reverse Heart Disease (New York: Penguin Group) p 48.

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