

Egg Yolks

Written by W.J.Pais



An **egg yolk** is a part of an [egg](#) which feeds the developing [embryo](#) . The egg yolk is suspended in the [egg white](#) (known more formally as albumen or [ovalbumin](#)) by one or two spiral bands of tissue called the [chalazae](#) . Prior to fertilization, the yolk together with the [germinal disc](#) is a single [cell](#) ; one of the few single cells that can be seen by the naked eye. If the egg is fertilized by a male then the yolk will be there with the outer whitepart. If the egg is not fertilized then the outer white part will not be there. As a [food](#) , yolks are a major source of [vitamins](#) and minerals. They contain all of the egg's [fat](#) and [cholesterol](#) , and about one-fifth of the [protein](#) .

If left intact while cooking fried eggs, the yellow yolk surrounded by a flat blob of whites creates the distinctive [sunny-side up](#) form of the food. Mixing the two components together before frying results in the pale yellow form found in [omelettes](#) and [scr](#)

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[ambled eggs](#)

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Uses

- It is sometimes [separated](#) from the egg white and used in cooking (for [mayonnaise](#) , [custard](#) , [hollandaise sauce](#) , [crème brûlée](#) , [avgolemono](#) , and [ovos moles](#)).
- It is used in painting as a component of traditional egg- [tempera](#) .
- It is used in the production of egg-yolk [agar plate](#) medium, useful in testing for the presence of [Clostridium perfringens](#) .
- Egg yolks also contains spermcells [antibody](#) called antiglobulin ([IgY](#)). The antibody transfers from the laying hen to the egg yolk by [passive immunity](#) to protect both embryo and hatchling from microorganism invasion.
- Egg yolk can be used to make liqueurs such as [Advocaat](#) , or mixed drinks such as [eggnog](#) .

The [yolk](#) in a newly laid egg is round and firm. As the yolk ages it absorbs water from the albumen, which increases its size and causes it to stretch and weaken the [vitelline membrane](#) (the clear casing enclosing the yolk). The resulting effect is a flattened and enlarged yolk shape.

Yolk color is dependent on the diet of the hen; if the diet contains yellow/orange plant [pigment](#) [xanthophylls](#) known as [lutein](#) , then they are deposited in the yolk, coloring it. [Lutein](#) is the most abundant pigment in egg yolk. A colorless diet can produce an almost colorless yolk.

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Yolk color is for example enhanced if the diet includes products such as yellow [corn](#) and [marigold](#) petals.

In the US, the use of artificial color additives is forbidden.

Eggs add [protein](#) to one's diet, as well as various other nutrients.

[Chicken](#) eggs are the most commonly eaten eggs. They supply all [essential amino acids](#) for humans,

and provide several vitamins and minerals, including

[vitamin A](#)

,

[riboflavin](#)

(vitamin B

2

),

[folic acid](#)

(vitamin B

9

),

[vitamin B](#)

[6](#)

,

[vitamin B](#)

[12](#)

,

[choline](#)

,

[iron](#)

,

[calcium](#)

,

[phosphorus](#)

and

[potassium](#)

. They are also an inexpensive single-food source of protein.

All of the egg's vitamin A, [D](#) and [E](#) are in the egg yolk. The egg is one of the few foods that

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naturally contains vitamin D. A large egg yolk contains approximately 60

[Calories](#)

(250

[kilojoules](#)

); the egg white contains about 15 Calories (60 kilojoules). A large yolk contains more than two-thirds of the

[recommended daily intake](#)

of 300 mg of

[cholesterol](#)

(although one study indicates that the human body may not absorb much cholesterol from eggs). The yolk makes up about 33% of the liquid weight of the egg. It contains all of the

[fat](#)

, slightly less than half of the protein, and most of the other nutrients. It also contains all of the choline, and one yolk contains approximately half of the recommended daily intake.

[Choline](#)

is an important nutrient for development of the brain, and is said to be important for pregnant and nursing women to ensure healthy fetal

[brain development](#)

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Recently, chicken eggs that are especially high in [omega 3 fatty acids](#) have come on the market. These eggs are made by feeding laying hens a diet containing

[polyunsaturated](#)

fats and

[kelp](#)

meal. Nutrition information on the packaging is different for each of the brands.

Cooked eggs are easier to digest, as well as having a lower risk of [salmonellosis](#).

Health issues

Cholesterol and fat

More than half the calories found in eggs come from the fat in the yolk; a large 50-gram chicken egg contains approximately 5 grams of fat. People on a low-cholesterol diet may need to reduce egg consumption; however, only 27% of the fat in egg is [saturated fat](#) ([palmitic](#) , [stearic](#))

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and

[myristic](#)

acids) that contains LDL cholesterol. The

[egg white](#)

consists primarily of water (87%) and protein (13%) and contains no cholesterol and little, if any, fat.

There is debate over whether egg yolk presents a health risk. Some research suggests dietary [cholesterol](#)

increases the ratio of total to

[HDL cholesterol](#)

and, therefore, adversely affects the body's cholesterol profile;

whereas other studies show that moderate consumption of eggs, up to two per day, does not appear to increase

[heart disease](#)

risk in healthy individuals.

[Harold McGee](#)

argues that the cholesterol in the yolk is not what causes a problem, because fat (particularly saturated) is much more likely to raise cholesterol levels than the actual consumption of cholesterol. A 2007 study of nearly 10,000 adults demonstrated no correlation between moderate (6 per week) egg consumption and

[cardiovascular disease](#)

or

[strokes](#)

except in the sub-population of

[diabetic](#)

patients which presented an increased risk of

[coronary heart disease](#)

Other research supports the idea that a high egg intake increases cardiovascular risk in diabetic patients.

Type 2 diabetes

Consumption of eggs has been linked to an increased risk of [type 2 diabetes](#) in both men and women.

A 2008 study using data on over 50,000 individuals collected by the Physicians' Health Study I (1982-2007) and the Women's Health Study (1992-2007) determined that the "data suggest that high levels of egg consumption (daily) are associated with an increased risk of type 2 diabetes."

Contamination

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A health issue associated with eggs is contamination by [pathogenic bacteria](#) like [Salmonella enteritidis](#).

Contamination of eggs exiting a female bird via the [cloaca](#)

may also occur with other members of the *Salmonella*

genus, so care must be taken to avoid the egg shell becoming contaminated with [fecal](#)

matter. In commercial practice, eggs are quickly washed with a sanitizing solution within minutes of being laid. The risk of infection from raw or undercooked eggs is dependent in part upon the sanitary conditions under which the hens are kept.

Health experts advise people to refrigerate eggs, use them within two weeks, cook them thoroughly, and never consume raw eggs. As with [meat](#), containers and surfaces that have been used to process raw eggs should not come in contact with ready-to-eat food.

A study by the U.S. Department of Agriculture in 2002 (Risk Analysis April 2002 22(2):203-18) suggests the problem is not as prevalent as once thought. It showed that of the 69 billion eggs produced annually, only 2.3 million are contaminated with *Salmonella*—equivalent to just one in every 30,000 eggs—thus showing that

Salmonella

infection is quite rarely induced by eggs. However, this has not been the case in other countries where

[Salmonella enteritidis](#)

and

[Salmonella typhimurium](#)

infections due to egg consumptions are major concerns.

Egg shells act as

[hermetic seals](#)

which guard against bacteria entering, but this seal can be broken through improper handling or if laid by unhealthy chickens. Most forms of contamination enter through such weaknesses in the shell. In the

[UK](#)

, the

[British Egg Industry Council](#)

award the lions stamp to eggs that, among other things, come from hens that have been vaccinated against

[Salmonella](#)

[

[36](#)

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Food allergy

Main article: [Egg allergy](#)

One of the most common [food allergies](#) in infants is eggs. Infants usually have the opportunity to grow out of this allergy during childhood, if exposure is minimized.

[Allergic reactions](#)

against egg white are more common than reactions against egg yolks.

In addition to true allergic reactions, some people experience a [food intolerance](#) to egg whites.

Food labeling practices in most developed countries now include eggs, egg products and the processing of foods on equipment that also process foods containing eggs in a special allergen alert section of the ingredients on the labels.

Antibiotic resistance

Information obtained by the Canadian Integrated Program for Antimicrobial Resistance (CIPARS) “strongly indicates that cephalosporin resistance in humans is moving in lockstep with use of the drug in poultry production.” According to the Canadian Medical Association Journal, the unapproved antibiotic ceftiofur is routinely injected into eggs in Quebec and Ontario to discourage infection of hatchlings. Although the data are contested by the industry, antibiotic resistance in humans appears to be directly related to the antibiotic's use in eggs.

[Reference 1](#)

[Reference 2](#)