Whey Protein as an Egg Replacer Guidelines

Whey protein offers numerous benefits for food and beverage manufacturers working to meet consumers' demand for higher-protein diets. Foremost among them is a potential cost savings, especially during times of short egg supply. Beyond cost, whey protein also offers several other benefits. It can be stored dry, eliminating the need to thaw or refrigerate the supply. Further, substituting these dry ingredients eliminates many microbial issues associated with fresh or liquid eggs.

Upon use in finished food applications, whey protein brings additional functional benefits. Whey protein improves food texture, as it binds water, boosts freezing and thawing stability, and delivers a fine and even crumb structure. Shelf life increases, too, as whey protein helps stabilize emulsions and minimizes oiling off.

TYPES OF WHEY PROTEIN SUBSTITUTES

There are two types of substitutes: whey protein concentrates (WPC) and whey protein isolates (WPI). Protein levels for WPC range from 34% to 80%, and start at a minimum of 90% for WPI. It's important when using whey protein to replace eggs that you identify the type of egg being replaced and the ingredients you need to combine to create the correct result.

Before you replace eggs with whey protein you should consider the following questions. First, are fresh or dried eggs being replaced? Next, what is the total amount of protein being replaced? And finally, what other effects will whey protein have on the finished product? One large fresh egg weighs approximately 52-55 g, and 75% is water. If you use whey protein to replace a whole fresh egg, the water must also be replaced. The functional properties of egg are associated with protein, so replacing with whey ingredients should be done on an equal protein basis. Only 12% of a large fresh egg is protein, while 46% of dried whole egg is protein.

REPLACE EGGS IN NUMEROUS APPLICATIONS

You can replace eggs either partially or completely in the following foods:

- Brownies
- Cheesecake
- Cookies
- Custards
- Egg Wash
- Fresh Pasta
- Layer Cakes
- Muffins
- Pancakes
- Pie Fillings
- Salad Dressing
- Sauces
- Snack Cakes
- Sponge Cake

Whey Protein as an Egg Replacer

TO REPLACE DRY WHOLE EGG, USE A COMBINATION OF WPC80 AND OIL, OR USE WPC34 AT 1.4 TIMES EGG AMOUNT.

	EGG WHOLE DRIED	60/40 BLEND WPC80 AND OIL	WPC 80 (WHEY PROTEIN CONC 80%)	VEGETABLE OIL	WPC34 (WHEY PROTEIN CONC 34%)
PROTEIN	47.4%	48.6%	81.0%	0.0%	34.0%
FAT	41.0%	44.3%	7.2%	100.0%	2.1%
CARBOHYDRATE	5.0%	2.1%	3.5%	0.0%	46.5%
MOISTURE	3.1%	2.4%	4.0%	0.0%	4.6%

TO REPLACE DRY EGG WHITE, USE EITHER WPC80 OR WPI. FOR LOW-FAT APPLICATIONS USE WPI.

	EGG WHITE DRIED	WPC80 (WHEY PROTEIN CONC 80%)	WPI WHEY PROTEIN ISOLATE
PROTEIN	81.1%	81.0%	91.5%
FAT	0.0%	7.2%	0.5%
CARBOHYDRATE	7.8%	3.5%	0.8%
MOISTURE	5.8%	4.0%	3.7%

TO REPLACE RAW OR FROZEN WHOLE EGGS, USE A COMBINATION OF WPC80, OIL AND WATER.

	EGG WHOLE RAW OR FROZEN	15/10/75 BLEND WPC80, OIL AND WATER	WPC80 (WHEY PROTEIN CONC 80%)	VEGETABLE OIL	WATER
PROTEIN	12.0 %	12.2%	81.0%	0.0%	0.0%
FAT	10.2 %	11.1%	7.2%	100.0%	0.0%
CARBOHYDRATE	1.1 %	0.5%	3.5%	0.0%	0.0%
MOISTURE	75.85%	75.6%	4.0%	0.0%	100.0%

TO REPLACE RAW OR FROZEN EGG WHITE, USE A COMBINATION OF WPC80 OR WPI, AND WATER.

	EGG WHOLE RAW OR FROZEN	14/86 BLEND WPC80 AND WATER	WPC80 (WHEY PROTEIN CONC 80%)	WATER	WPI WHEY PROTEIN ISOLATE
PROTEIN	10.9%	11.3%	81.0%	0.0%	91.5%
FAT	0.2%	1.0%	7.2%	0.0%	0.5%
CARBOHYDRATE	0.7%	0.5%	3.5%	0.0%	0.8%
MOISTURE	87.6%	86.6%	4.0%	100.0%	3.7%