

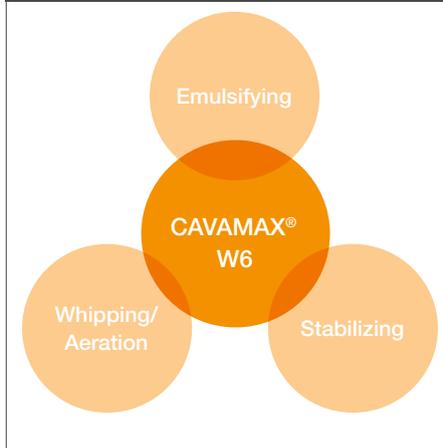
CAVAMAX® W6 – EGG-FREE BAKERY SOLUTIONS

Health- and sustainability-conscious consumers are driving the “free-from” trend by asking for egg-free alternatives. Numerous recent public health concerns, such as avian influenza and fipronil contamination, have also increased the importance of egg replacement. Moreover, egg is a costly ingredient with considerable supply and price fluctuations. Replacing egg can be very challenging, however, as it represents an essential, multi-functional component in many fine bakery products.

Here WACKER presents a solution for up to 100% egg replacement in ready-to-use powder mixes that still fulfill the quality and sensory expectations of consumers.

Made by enzymatic conversion of starch, CAVAMAX® W6 is produced in a patented process from renewable raw materials. As shown in Figure 1, the cyclic oligosaccharide consists of 6 glucose molecules.

Figure 2: CAVAMAX® W6 – a Soluble Fiber with Unique Characteristics



Functionality of CAVAMAX® W6 in Fine Baked Goods

Egg has a major impact on fine baked goods, from the processability of the batter to the determination of quality parameters such as volume, texture, taste and shelf-life. Through its unique properties (see Figure 2), CAVAMAX® W6 improves batter aeration and the stability of fat droplets and gas cells. The synergy of CAVAMAX® W6 with proteins stabilizes the texture and retains the moistness of the final baked good.



Pound Cake with CAVAMAX® W6

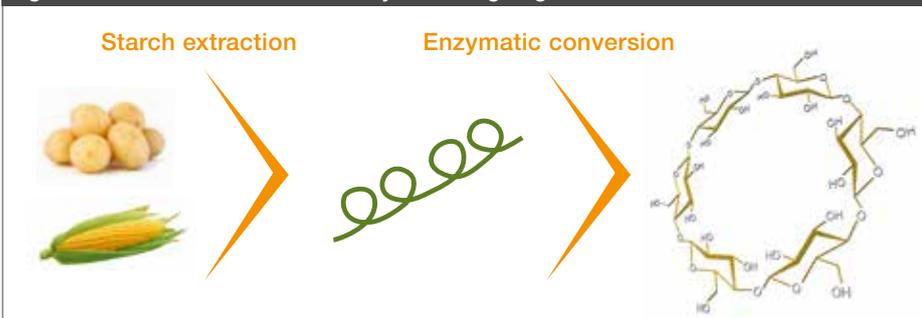
In the recipe below, the combination of CAVAMAX® W6, protein and water can be used to completely replace egg in a traditional pound cake.

Example Recipe with CAVAMAX® W6

Ingredients:	[%]
Wheat flour (10% protein)	27.1
Vegetable oil (e.g. sunflower oil)	23.6
Sugar	22.4
Water	19.1
Protein (WPC 70/ 80)	3.5
Baking powder (E 500/ E 450)	1.4
Starch (e.g. corn starch)	1.0
CAVAMAX® W6	1.0
Emulsifier (E 471/ E 475)	0.7
Salt	0.2

The original recipe contained 24% egg.

Figure 1: CAVAMAX® W6 – A Naturally Occurring Oligosaccharide



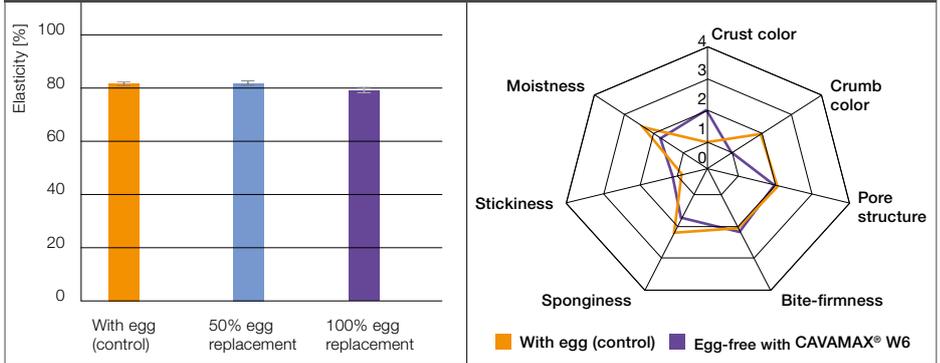
Skip the Egg While Keeping the Quality

CAVAMAX® W6 allows manufacturers to replace egg without compromising on product quality, and can simply be added to powder premixes for easy handling. Because it has no major influence on batter pH or viscosity, CAVAMAX® W6 can be used in existing equipment at standard settings. In comparison to egg, which can be difficult to handle, CAVAMAX® W6 allows producers to employ lean HACCP methodology and provides a buffer for seasonal egg-price deviations. Our CAVAMAX® W6 solution can reduce costs by up to 40%.

Analysis of Texture and Taste Verifies Excellent Quality with CAVAMAX® W6

Elimination of egg in a cake typically results in reduced volume and elasticity. CAVAMAX® W6 compensates for the loss in elasticity, as shown in Figure 3. The sensory parameters of cake made with CAVAMAX® W6 are likewise very similar to those of the egg-containing control. Variations in color can easily be adjusted by adding β-carotene.

Figure 3: Texture and Sensory Profile of Egg-Free Cake with CAVAMAX® W6 vs. Control



Left: Elasticity of pound cake crumb measured via texture profile analysis. Cakes with partial (50%) and 100% egg replacement contain 1% CAVAMAX® W6; the protein and water content have been adjusted accordingly.
Right: Sensory analysis of pound cake with egg and 100% egg-free (egg replaced with 1% CAVAMAX® W6; adjusted protein/ water content).

Advantages of CAVAMAX® W6

- Soluble dietary fiber (EU Health Claim)
- Plant-based: vegan, kosher & halal
- Clean label (no E-number)
- Free of all major allergens
- Non-GMO grade available
- Sustainability: based on renewable raw materials (starch)
- Easy to formulate
- Easy to process (powder mixes)

CAVAMAX® W6 can be used for replacing some or all of the egg in a recipe and is suitable for many applications apart from pound cake, such as sponge cake, muffins and sweet dough products.



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