Designer Egg: A Novel Method in Contemporary Healthcare

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An egg is a naturally occurring chemical storehouse that supports life and provides extremely nutritious nourishment, including important human nutrients. Customers are constantly looking for novel items, and they are also pushing the market for a food category that has potential health advantages that go much beyond what has been historically acknowledged. Owing to its superior nutritional profile, low cost, and adaptability in culinary preparation, eggs are a widely consumed food in all global communities. They provide protein as a single item as well. The body needs protein to create and repair bodily tissues. Many customers want relatively different items in terms of flavor, color, freshness, safety, and other factors. Changing the old product is one strategy for marketing the new one. One of the most difficult issues confronting the business is the rapid fall in egg consumption over the past 50 years, but since eggs are a significant source of protein in the COVID-19 age, demand has grown. Designer eggs can help to reduce this issue.

What Happening with Designer Eggs in Our Region? Is there Any Promising Market for these Products in Our Country?

Compared to ordinary eggs, designer eggs are more costly. It implies that not every social class is able to purchase these eggs. In Wayanad (Kerala), a group of farmers near Vaduvanchal display customized eggs. Despite the fact that eggs are thought to be a complete food, providing the majority of the nutrients required by the body, many people are put off by their high cholesterol level. Recently, a group of farmers in Vaduvanchal in Wayanad, who are part of the Kisan Jyothi Farmers Club (KJFC), funded by NABARD, have unveiled redesigned eggs, which they say would allay concerns. They claim that their "Omega" brand eggs provide the answer and dispel the concerns of those who are worried about cholesterol.

Need For Designer Eggs and its Preparation

Due to chickens' special capacity to incorporate dietary lipid into the yolk of their eggs, hen eggs may be a source of unsaturated fatty acids.

Pharmacological agents reduce cholesterol in eggs by preventing the hen from synthesizing cholesterol or by preventing cholesterol from the blood from entering the developing yolk on the ovary. Currently, the FDA has not authorized Atorvastatin or any other medication for commercial usage, despite the treatment showing promise in decreasing cholesterol. A different strategy to lessen the effects of cholesterol from eggs is to change the fatty acid makeup of the yolk.

Ways to Produce Designer Eggs

Through special feeding practices, it has been possible to produce eggs with even less cholesterol and saturated fat and with substantially increased amounts of omega-3 polyunsaturated fatty acids, carotenoids, vitamins, minerals, antibodies and even bioactive peptides. Inducing metabolic changes in the hen that can result in synthesis of compounds that essentially end up in the egg. Change the characteristics of membrane transport to facilitate movement of compounds into the egg.

Modification in Nutritional Profile with Designer Eggs

1. Omega-3 enriched egg
2. Low cholesterol eggs
3. Immunomodulating egg production
4. Mineral enriched designer eggs
5. Herbal enriched designer eggs
6. Pigment enriched designer eggs

7. Antioxidants enriched eggs

8. Vitamin enriched designer eggs.

Omega-3 Enriched Eggs

Omega-3 fatty acids called as n-3 fatty acids are a family of PUFA. Egg contains high proportion of n-6, PUFA but is a poor source of n-3 fatty acids. Feeding diets high in omega-3 fatty acids produce eggs with high omega-3 fatty acids content in yolk. There are two types of omega-3:

1. Marine type- PUFA, DHA and EPA which are more commonly found in deep-sea cold-water fish, fish oil and marine algae.

2. Terrestrial type- PUFA, LNA found in canola oil, soybean oil, flaxseed, walnuts, and spinach and mustard green

Reduction in Cholesterol Content

The poultry industry is well aware of the cholesterol health issues. Product quality and safety have always been of primary importance. Designer eggs containing lower cholesterol and saturated fat concentrations are available to the general public. The yolk cholesterol levels can be significantly reduced by supplementing herbal plants and products like basil (tulsi), bay leaves, citrus pulp (nirangenin), grape seed pulp guar gum, roselle seeds, spirulina, tomato pomace (lycopene), and many more herbs in chicken diets will reduce the chicken and yolk fat cholesterol levels by 10-25%.

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