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To Determine the Fat content of Chicken Egg Yolk

Rida Amir, Hira Iftikhar , Aqsa Amjad

Abstract

The present study was conducted to determine the fat content of egg yolk .Research has been carried out in the laboratory of College of Home Economics ,Lahore. Three readings were taken for each sample and were analyzed in the laboratory to determine the fat content. The results showed the fat content in the yolk of egg

Introduction

Over the most recent thirty years, chicken egg production expanded 152% worldwide and that in Asia expanded 388%, which shows that eggs are a typical food source devoured by many. Eggs are a primary fixing in numerous food items due to their high healthy benefit, great utilitarian properties, and extraordinary tangible characteristics. The emulsifying properties of fluid egg yolk are exceptionally compelling to food researchers. Egg yolks are utilized to make mayonnaise and salad dressing and are a significant fixing in different food varieties like bread kitchen items, custards, and pasta (Kiosseoglou,2003).

Dried egg powder (egg white and egg yolk) is broadly utilized in food readiness since it is microbiologically protected and simple to ship contrasted with unshelled or fluid eggs. Dried egg powder additionally is likewise equivalently simpler to store, handle, measure, and acquire consistency. Moreover, preparing new eggs into powder structure can expand the time span of usability of the item to as long as a year when refrigerated. Dried egg yolk offers consistency comparative with that of new eggs, as the piece of egg yolk might change after some time on the grounds that the permeable shell permits trade of carbon dioxide and dampness. Egg yolk powder can be reconstituted effectively by blending the powder in with water, and the reconstituted item has similar healthy benefit and practical properties as new egg yolks. Business egg yolk powder typically is delivered utilizing the shower drying technique. In any case, the high temperature needed for shower drying may prompt protein denaturation, which contrarily impacts the utilitarian and physicochemical properties of the item (Caboni *et al*.,2005).

The egg yolk lipids have an extremely high dietary benefit. Because of the unsaturated fat profile, high oil solvent nutrient and lecithin content egg yolk oil can be utilized as a generally excellent added substance to a human sustenance. Healthful properties in eggs can be influenced through the laying hen feed. There are acceptable ways realized how to improve egg yolk oil with supplements, however how to extricate them however much as could reasonably be expected and keep them in their regular condition after extraction stays the inquiry. There are a few techniques for oil extraction from egg yolks known, however in this composition dissolvable extraction of egg yolk oil from the fluid egg yolk was concentrated as a most monetarily sensible strategy. In the event of dissolvable extraction high innovative and wellbeing prerequisites should be considered while picking solvents for extraction. Solvents should separate however much as could be expected lipids from crude material, should have a low bubbling temperature, for simpler and conservative eliminating from the item, and should be just about as less as conceivable poisonous (Lewis *et al*., 2000).

The distinction of oil extraction from egg or egg yolk powder is that fluid egg yolk contains a ton of water and extraction with non-polar solvents isn't effective because of contrast in dissolvable and egg yolk polarities. Polar solvents, for example, lower alcohols, denature egg yolk proteins obliterating hydrogen bonds or electrostatic collaboration in protein structure opening the way to the nonpartisan lipids, what makes extraction with non-polar dissolvable conceivable. Without protein denaturation, polar solvents will extricate polar layer related lipids from the egg yolk. The mix of polar and non-polar solvents for better lipid extraction from fluid egg yolk can be picked. The 2-propanol/hexane blend can be a decent dissolvable for extraction of egg oil from fluid egg yolk (Ahn *et al.*, 2006).

Egg yolk is notable as a characteristic oil-in-water emulsion. As a result of its multifunctional properties egg yolk is broadly utilized in the food, clinical, drug, and beauty care products enterprises. The protein content of egg yolk addresses about 15.7–16.6% of all hen egg yolk compounds. Livetins division withα,β, andγ-livetins is somewhat heterogeneous and represents about9.3% of hen egg yolk proteins. All livetins are water-solvent and the

overall measure of the three livetins in the yolk is 2:5:3, individually. The significant part of γ-livetin is IgY (immunoglobulin Y) while egg whites is the excellent segment ofα-livetin, andα-2-glycoprotein is the significant constituent ofβ-livetin (Kovacs-Nolan, Phillips, and Mine,2005; Schade and Anibal Chacana, 2007).The individual segments of yolk are hard to isolate, however egg yolk can be effortlessly fractionated by basic weakening and centrifugation into pellet (granule) and supernatant (plasma) (Laca et al., 2015).Fractionation of yolk could develop its field of utilization and increment its worth. This examination centers around the IgY-rich livetins portion, which can be separated from egg yolk utilizing 10× weakening and centrifugation. The10-crease weakening strategy is most generally utilized in IgY readiness from egg yolk, which permits the confinement of IgY immunoglobulin with a serious level of virtue and recuperation (95%) and this interaction could be promptly applied on a business scale (Eckert *et al*.,2014).

Methodology

Purpose

The study was conducted to examine the total fat content in chicken egg yolk. Experiment was conducted in Food and Nutrition laboratory of Govt. College of Home Economics.

Sample

Egg yolk

Data Analyzing Tool

The data was analyzed statistically and presented in the form of tables.

Method used to determine the fat content

The method for determining the total fat content in the egg yolk is crude extraction method.

Laboratory Apparatus

Pipette
Measuring Cylinder
China dish
Separating funnel
Flat bottom flask
Weighing balance
Electric Plate

Chemicals

Ethanol
Petroleum ether
Concentrated ammonium hydroxide
Diethyl ether

Procedure

- Empty china dish was weighed on weighing balance.
- Sample of egg yolk was taken in weighed china dish and weigh again to get sample weight.
- Sample was taken in beaker and separating solutions were added and shake well.
- Content was shifted in separating funnel and left for some time to let layers settled.
- Two distinct layers formed
- Aqueous layer and organic layer
- Open knob and extract aqueous layer in beaker carefully.
- Another weighed china dish was taken and drain the upper layer in it.
- China dish was placed on hot plate to get the moisture evaporated

Precautions

- Glassware should be washed properly
- All the extra moisture should be removed carefully
- Reagents should be handled with care

Results

No	Wt. of dish	Wt. of egg yolk	Wt of egg yolk + petri dish	Wt of Fat	Total %age of fat
1	34.31	14.44g	44.83g	3.54	24.51%
2	34.31	14.44g	44.84g	3.54	24.56%
3	34.31	14.44g	44.80g	3.53	24.53

Total = 10.61
Mean = 3.5367

Conclusion

The study was conducted to find out the content of egg yolk collected from Lahore. Experiments were carried out on egg yolk samples in Food and Nutrition lab of Govt. College of Home Economics Lahore. After calculations and tabulations, Conclusion were drawn which is as follow. It was found that average fat of egg yolk is 24%.

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