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Chemical composition and traditional uses of eggs of different avian species-A review

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ABSTRACT

Eggs are considered to be nature's perfect and balanced food, which completes the on a daily basis dietary need of the human being body. This is not only a perfect source of protein but also a high-quality supply of Vitamins i.e. A, B6, B12, Folic acid, Phosphorus, Selenium, amino acid and Iron. Egg has fat, along with significant components of minerals as well as vitamins. Egg gives an extraordinary and balanced source of nutrients for humans of all ages. During the rapid growth, egg provides the essential nutrients for growth and maintenance of health specifically for children as well as teenagers. Eggs are utilized to treat low blood pressure, fever, cold, weakness, breast cancer, weight loss, weak eye side, cold, bones, teeth, CNS, sprains, eye-each, BP, nourishing, bronchitis, burst furuncles, asthma, hemorrhoids, diabetes, indigestion, jaundice, to ease birth, diabetes, sinusitis, bronchitis, shortness of breath, rheumatism, stuffy nose, nervous problems, flu, weak bones, furuncle, burns, weakness, sore throat, night blindness, and otic infection. The egg is made up of structures which provide the optimum environment for the growth and development of an embryo. It is one of biggest source of essential nutrients for humans except the vitamin C. Eggs are surprisingly delicious and healthy foods used in different ways.

Keywords: Utilization of egg, Source of protein, Vitamin A, B6, B12

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INTRODUCTION

CHEMICAL COMPOSITION OF EGG CONTENTS

Albumen is clear liquid. It is present around egg yolks and 20-25% of the total egg. Besides water, the chief or main part of albumen is proteins. Proteins of different kinds are present in egg white. It consists of 90 percent water and 10% protein (Hosen *et al.*, 2013) i.e. ovomucoid (11%), ovalbumin (54%), conalbumin (13%), lysozyme (3.5%), ovomucin (2%), and globulin (3.2 to 3.7%) (Alleoni, 2006).

Ovalbumin

It is consist of 54% protein, has different type A_1, A_2 and A_3, A_1 keeps 2 phosphate groups with each molecule, A_2 one group, as well as A_3 has no phosphate group (Zabik, 1992).

Conalbumin or ovotransferin

It is consist of glycoprotein (13%) (Alleoni, 2006). It has almost 15 disulphide bindings as well as almost 55 present reactive filtrate by Zabik (1992).

Ovomucoid

It is also consist of the glycoprotein (Whitaker and Tannenbaum, 1977) and become stable by the hydrophobic strengths and having high resistance to high temperature (Vadehra *et al.*, 1973). It dissolves in dilute salt solution but its water insoluble protein. This is about 11% proportion of an egg white (Caubet and Wang, 2011).

Ovomucin

It is consist of glycosulphiprotein (2%), has gel-like structure. The eggwhite has high viscosity (Hayakawa and Sato, 1977).

These proteins are categorized into 3 components first is A1, second A2, and third A3 depending upon the phosphorus content named as Phophoglycorotiens. Conalbumin comprises 13% protein of albumin. This protein present in two forms; and both form absent in phosphorus or sulphur contents. It is the glycoprotein which consists about 10 percent of the albumen proteins. Ovomucin protein helps in the thickness of the albumen and jelly like character of egg white. It comprises two percent of the egg albumin. Lysozyme is an enzyme capable of breakdown of the cell wall of the bacteria. There are three components resent in Lysozyme called A, B and C. Its function is to makes the vitamins which are unavailable and binds with biotin. Avidin is composed of 0.05 percent of egg having white protein. It is usually denatured by heat eggs on heating and does not impact the accessibility of the biotin. Ovoglobulin is also a protein consists of 2 components as first G1 and second G2 and both (G1 and G2) are used as excellent foaming agents. Inhibition of chymotrypsin and trypsin is done by Ovoinhibitor (Anonymous, 2017).

The egg yolk is usually yellow in color in egg. It is always present in the albumen surrounded by chalazae. The membrane which surrounds the egg yolk is called the vitalline membrane (Bellairs *et al.*, 1963). Most often, the egg yolk is an extracellular and not built up within the egg cytoplasm, opposing to this the egg cell and yolk of bird, it consists of a single big cell. Later than egg fertilization, the development of an embryo go ahead to the creation of blastoderm. The egg yolk at this stage is almost fisty percent (Bellairs and Osmond, 2005). Egg is having the essential unsaturated fatty acids (EUFA) (Linoleic, oleic acid), fat-soluble vitamins, trace minerals, iron and phosphate (Stadelman *et al.*, 2017). Linoleic acid is the most highly consumed Poly Unsaturated Fatty Acid (PUFA) found in the human diet (Whelan and Fritsche,

2013). Egg having twelve percent of protein, Eleven percent of fat and other vital compounds of vitamins and minerals (Panda, 1995).

Table 1: Chemical composition of eggs of different birds (percentage).

Composition	Chicken	Mallard	Mourning Dove	Starling	Turkey	Duck	Goose	Coturnix quail
Shell	11	10-12	12-18	11-14	12	12	12.4	13-17
Albumen	30-32	33-39	28-30	15-19	32	33	33.4	30-33
Yolk	57-59	47-55	51-59	69-73	52	50	55.1	52-56

Source: (Brody, 1945; Romanoff and Romanoff, 1949; Lawrence and Schreiber, 1974; Schreiber and Lawrence, 1976; Ricklefs, 1977)

TRADITIONAL USES OF EGGS

Eggs are utilized to treat low blood pressure, fever, cold, weakness, breast cancer, weight loss, weak eye side, cold, bones, teeth, CNS, sprains, eye-each, BP, nourishing, bronchitis, burst furuncles, asthma, hemorrhoids, diabetes, indigestion, jaundice, to ease birth, diabetes, sinusitis, bronchitis, shortness of breath, rheumatism, stuffy nose, nervous problems, flu, weak bones, furuncle, burns, weakness, sore throat, night blindness, and otic infection (Padmanabhan and Sujana, 2008; Alves *et al.*, 2010; Lohani, 2010; Oliveira *et al.*, 2010; Alonso-Castro *et al.*, 2011; Jacobo-Salcedoa *et al.*, 2011; Lohani, 2011; Alves *et al.*, 2012; Barros *et al.*, 2012; Haileselasie, 2012; Souto *et al.*, 2012; Bagde and Jain, 2013; Betlu, 2013; Kim and Song, 2013; Martínez, 2013; Chellappandian *et al.*, 2014; Bagde and Jain, 2015; Altaf *et al.*, 2017; Dey *et al.*, 2017; Altaf *et al.*, 2018).

CONCLUSIONS

The egg is made up of structures which provide the optimum environment for the growth and development of an embryo. It is one of biggest source of essential nutrients for humans except the vitamin C. Eggs are surprisingly delicious and healthy foods used in different ways.

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