

# The eggs' nutritive value and

**Table 1 - Protein and lipid fractions and special components in 100g of egg**

Component	Quantity	Component	Quantity
<b>Albumen proteins</b>		<b>Phospholipids</b>	
Ovalbumin	3.78g	Phosphatidylcholine (lecithin)	2.47 g
Conalbumin (Ovotransferrin)	0.91g	Phosphatidyl ethanolamine	0.48 g
Ovomucoid	0.77g	Phosphatidyl serine	102 mg
G2 & G3 globulins	0.64g	Lysophosphatidyl choline	226 mg
Lysozyme (G1- globulin)	0.260g	Sphingomylin	38 mg
Ovomucin	0.203g	Plasmalogen	34 mg
Ovoflavoprotein	60mg	Lysophosphatidyl ethanol amine	78 mg
Ovoglycoprotein	50mg	Inositol phospholipids	20 mg
Ovomacroglobulin	40mg	<b>Yolk sterols</b>	
Ovoinhibitor	20mg	Cholesterol	0.40 g
Avidin	4mg	Brassicasterol	4.8mg
Cystatin	3mg	Campesterol	4.8mg
<b>Yolk proteins</b>		Stigmasterol	0.8mg
Ovovitellin	4.20g	B-sitosterol	0.8mg
Lipovitellin	0.5g	Glycolipids/ cerebrosides (ovokerasin & ovophrenasin)	38 mg
Livetin	0.4g	<b>Yolk pigments</b>	
Low density lipoprotein	0.4g	Carotenes	1 to 2 mg
Ovolivetin	0.30g	Cryptoxanthin	0.2 to 0.60 mg
Phosvitin	30mg	Lutein, astaxanthin, zeaxanthin & other	0.6 to 4.50 mg
Vitellogenin	10mg	xanthophylls	(depends on hen's feed)
<b>Yolk lipids</b>		<b>Special components</b>	
Triglycerides	7.30g	Taurine	5-8mg
Total saturated F.A.	3.55g	Sulforaphane	1-4mg
Total MUFA	4.55g	Lumiflavin	0.25mg
Total PUFA	1.31g	Lumichrome	0.20mg
Fat soluble vitamins	4mg	Sialic acid	10mg
		Betaine	90mg

**Table 2 - Percentage contribution of "recommended nutrient requirements" by one egg and its relative cost**

Nutrient	Quantity in 1 egg	Recommended daily nutrients for adults *	% contribution by 1 egg
Protein (g)	6.9	60	11.5
Energy (KCal)	85	2500	3.5
PUFA (g)	1.17	10.0	11.7
MUFA (g)	2.76	12g	23.0
Calcium (mg)	35	400	8.8
Phosphorus (mg)	125	700	17.9
Iron (mg)	1.3	30	4.3
Zinc (mg)	0.8	9	8.9
Iodine (mg)	0.04	0.2	20.0
Selenium (mcg)	0.6	5.5	10.9
Vit. A (mcg)	188	225	83.3
Vit. D (mcg)	0.95	5	19.0
Vit. E (mg)	1.6	10	16.0
Vit. K (mg)	0.005	0.65	0.8
Vit. C (mg)	0	40	0.0
Thiamin (mg)	0.05	1.2	4.2
Riboflavin (mg)	0.17	1.3	13.1
Niacin (mg)	0.05	16	0.3
Pyridoxine (mg)	0.14	2.0	7.0
Folic acid (mg)	0.04	0.10	40.0
Vit. B12 (mcg)	1.6	1.0	160.0
Panthenic acid (mg)	0.85	5	17.0
Biotin (mcg)	10.0	25	40.0
Choline (mg)	410	450	91.1
Cost of 1 egg as % of total food cost/day**	Rs.1.25/ egg	Rs.20.00/ day for food	6.25%@

\* Requirements vary with gender, age, physical activity, pregnancy and lactation.

\*\*Values in Indian rupees = US\$ 1= 1 Rs.49

@ An egg will supply about 25.5% of the total nutrients required per day, at just 6.25% of the total expenditure on food per head/day, based on the prevailing market prices of various foodstuffs in India

**It is a common belief that eggs are high in cholesterol, which could lead to hypercholesterolemia. But in fact, the egg has several cholesterol lowering factors and includes many health-promoting nutrients.**

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**T**he table egg is the most nutritious, unadulterated, yet relatively inexpensive natural food, with a high digestibility coefficient. Egg protein is the best protein available in nature for human consumption, with a well-balanced amino acid profile, having the highest biological value, protein efficiency ratio, net protein utilisation, net protein value and chemical score. It is the golden standard by which to measure the quality and nutritive value of any other human

# health promoting components



**Eggs are the best vehicle to deliver a multitude of health promoting components at low cost.**

food. As well as high protein quality, it is rich in all essential amino acids, fatty acids, minerals and vitamins; except vitamin C (updated chemical composition will be supplied on request by Email). The special components and protein and lipid fractions of the egg are shown in *Table 1*.

## Cost effective food

Even though the chicken egg is nutritionally superior, its cost is relatively cheaper, due to low cost egg production technology. Hence the egg is within reach of poor people, even in developing countries, and available in abundance everywhere. An egg is cheaper than a cup of coffee, tea, alcohol or soft drink; yet far superior to them nutritionally. In fact there is no nutritional comparison at all between the egg and these drinks, because they don't contain any nutrients, except perhaps sugar, which could predispose persons to several chronic diseases. Moreover, eggs are available year round at uniformly low costs; unlike many seasonal vegetables and fruits.

An egg will supply about 7g of wholesome protein of the highest biological value, 6g of emulsified easily digestible fat, rich in MUFA, phospholipids, PUFA, Vitamin E and cholesterol needed for

**Table 3 - Special components in the egg and their role in human health**

Component	Functions
1. Antibody "IgY"	Immunostimulant, Therapy for rotavirus, E-Coli, Salmonellosis, pseudomonas, Strepto - and Staphylococcus infections, prolongs the life of AIDS patients
2. Betaine	Reduces plasma homocysteine level, an independent risk factor for CVD
3. Brassicasterol, B-sitosterol, campesterol and stigmasterol (minor sterols)	Increases the serum HDL (good) cholesterol levels
4. Carotenoid pigments	Natural anti-oxidant, eliminates free radicals, anti-carcinogenic, pre-cursor of Vit.A, reduces LDL (bad) cholesterol & prevents cardiovascular diseases (CVD)
5. Cojugated linoleic acid	Reduces certain heart and cancer problems
6. Folic acid	Reduces CVD and cancer
7. G2 & G3 globulins	Anti-microbial agents, immuno stimulants and antigenic
8. Lysozyme	
9. Ovomacroglobulin	
10. Lecithin conjugated with vitamin B12	Improves nervous tissue development in infants and reduces the severity of Alzheimer's disease.
11. Lecithin	Natural anti-oxidants, prevent ageing and formation of atherosclerotic plaques and thereby prevents CVD
12. Phosvitin	
13. Lipoprotein "YLP-p17.5"	Promotes growth of several mammalian cells, including the "human hepatic cells," general growth promoter
14. Lumichrome	Natural anti-oxidants, scavenges on free radicals, prevents atherosclerosis and ageing, anti-carcinogenic
15. Lumiflavin	
16. Mono-Unsaturated Fatty Acids (MUFA) - oleic acid	Lowers LDL (bad) cholesterol and Increases HDL (good) cholesterol
17. Omega-3 fatty acids (ALN, DHA & EPA)	Reduce hypertension, LDL and VLDL cholesterol and triglycerides, prevents thrombosis, atherosclerosis and angina, cardio-protective
18. Organic chromium	Reduces serum LDL cholesterol and checks blood sugar levels, by improving insulin production
19. Organic selenium	Natural antioxidants, prevents rancidity, Keshan disease, ageing and formation of plaques in the arteries, immuno stimulants
20. Vitamin E	
21. Ovalbumen	Protects mucous membrane, thereby prevents gastritis, ulcer, diarrhoea & dysentery
22. Sialic acid - "Neu 5 AC"	Possesses anti-inflammatory and anti-viral properties
23. Sulforaphane	Anticarcinogenic
24. Taurine	Reduces serum LDL cholesterol and prevents the formation of Atherosclerotic plaques.

brain and other nervous tissue development; yet it is low in undesirable energy and cheaper.

## Full of nutrients

An egg will supply about 11.5% of protein, 11.7% of PUFA, 23.0% of MUFA, 100% of phospholipids, 83.5% of Vitamin - A, 19% Vitamin - D, 13.1 Vitamin - B2, 160% Vitamin - B12, 40% folic Acid, 16% Vitamin - E, 17% Pantothenic acid 40% biotin 91.1% choline, 17.9% Phosphorus, 15% Magnesium, 4.3% Iron, 17% Magnesium, 8.8% Calcium, 20% Copper, 8.9% Zinc, 20% Iodine and several other nutrients required per adult person per day. On an average, an egg will supply nearly 25.5% of the total nutrients required per day, at a cost of 6.25% of the total expenditure on food, for an individual per day (*Table 2*).

In addition to the above nutrients, egg contains several special components; which have nutritional, non-nutritional and health promoting properties as described in *Table 3*. Ordinary eggs are a

rich source of components 4 to 12, 16 and 21, moderate source of principles 1 to 3, 13 to 15, 20 and 22 and have low levels of 17 to 19, 23 and 24; whereas the "designer egg" is rich in all these components.

## An excellent vehicle

Researchers have identified that eggs are the best vehicle to deliver these health promoting components to the humans at low cost, along with other nutrients already present in the egg. These eggs are called as diet, functional, designer, omega-3 or nutritionally enriched eggs. These eggs contain several fold more of the health promoting components listed above (but within the safety limits), compare to ordinary table eggs; there by making it a health promoting food. Moreover, hen's egg is very tasty as well as quick and easy to prepare several fast foods. Hence, based on its nutritional value, taste, wholesomeness, health promoting properties and relatively cheaper cost it has to be consumed by all for better health. ■