

## **THE NUTRITIVE VALUE OF EGGS**

**D. Ștef, M. Drugă, Lavinia Ștef, Mărioara Drugă, G. Bujancă**

Faculty of Food Processing Technology, Banat's University of Agricultural Sciences and Veterinary Medicine, Calea Aradului 119, RO-300645, Timișoara

### **Abstract**

*The purpose of this paper was to establish the nutritive value of eggs sold on the market. Samples were taken both from stores and market from Timisoara town. For nutritive value appreciation was used the calculate methodology establish by the (Segal and col. 1983). This method consists in nutritive value appreciation according with the following component: protein, lipids, sugars, Ca, P, Fe and the vitamins – A, B<sub>1</sub>, B<sub>2</sub> and C. The results of the laboratory determinations are presented in extension in this paper. For the integral egg (without the shell) the nutritive value ( $NV_{10}$ ) was 12,30, for the glair – 3.73 and for the yolk – 18.35. For comparison are presented some data from our previous researches: milk –  $NV_{10} = 3.53$  for the milk with 1.8% fat and 5.27 for the milk with 4.03% fat; Telemea cheese -  $NV_{10} = 9.31$ .*

**Key words:** eggs, nourishing value, yolk, glair

### **Introduction**

The egg is a very complete food and it have a high nutritive value being used both food and dietetically purposes. The integral egg (without shall) contains 13% protein, 11.3% fats, 0.8% sugars and 0.9% mineral substances (Ștef, 2002).

The mixture of proteins from the yolk with those from glair realize the most equilibrate content of amino acids for the organism and for this reason the egg protein is considerate a standard one.

The egg is considerate the most complete food in lecithines and cephaline that have a tonic effect on nervous system. Also it is abundant in vitamins.

The purpose of this paper is to establish the nutritive value of the eggs. The samples were taken from the big stores by Timisoara, in the period of October 2002 – April 2003 and were analyzed at DSV Timis and in the laboratory of Animals Science Faculty.

## **Experimental**

For a long time there has been a mistake considering the nourishing value as the energetic value, easy to calculate. This simplification represents a major error, especially in the circumstances of the modern life when the body needs a minimum of energy, but a proper contribution of nourishing substances with biocatalytic functions.

It is necessary to point out that the nourishing value of food products is given by its composition in nourishing substances (proteins, lipids, carbohydrates, vitamins, mineral salts). Also the nutritive value is due to the relation that exist between these components, their quality, their implication in the degree digestive and the way in which the product satisfies the body's necessities.

(Segal and all, 1983) suggest that for the nutritive value of food to take in consideration only 10 components that are indispensable for the organism: proteins, lipids, carbohydrates, Ca, P, Fe, vitamins A, B<sub>1</sub>, B<sub>2</sub> and C. The index is named *The nutritive value of 10 components (VN<sub>10</sub>)* and it is calculated as follow:

$$VN_{10} = 1/10 (Pr \cdot F_{Pr} + L \cdot F_L + G \cdot F_G + Ca \cdot F_{Ca} + P \cdot F_P + Fe \cdot F_{Fe} + A \cdot F_A + B_1 \cdot F_{B1} + B_2 \cdot F_{B2} + C \cdot F_C).$$

where: P<sub>r</sub> = protein content in the product, g/100g;

L = lipids content, g/100g ;

G = carbohydrates content, g/100g ;

Ca = Ca content, g/100g ;

P = P content, g /100g ;

Fe = Fe content, g/100g ;

A, B<sub>1</sub>, B<sub>2</sub>, C = the corresponding vitamins, mg/100g.

For the F coefficient establish was taken in consideration the utilization coefficients of the components, the biological value coefficients, the daily requirements for each components. In table 1 are presented the value of this factor for some of the mainly groups alimentary products.

Using the F values it could be calculated the nutritive value for each alimentary product, and in this manner could be demonstrated its value for the metabolism.

**Table 1.** The value of F coefficient for nutritive components from the mainly groups alimentary products

Products	F <sub>Pr</sub>	F <sub>L</sub>	F <sub>G</sub>	F <sub>Ca</sub>	F <sub>P</sub>	F <sub>Fe</sub>	F <sub>A</sub>	F <sub>B1</sub>	F <sub>B2</sub>	F <sub>C</sub>
Milk	1.02	0.95	0.22	69	80	6.9	67	67	52	1.25
Egg	1.28	0.95	0.22	69	80	6.9	67	67	47	-
Meat	1.09	0.95	0.22	69	80	3.8	67	53	42	1.00

## Results and Discussions

The products sort on the market is following:

- Very fresh eggs in Metro, Billa, Etti and sometimes on the rustic market;
- Fresh eggs in the bulk sale point;
- Eggs preserved by cold in Euro, small magazines and rustic market.

If in Metro, Billa and Etti the eggs are packed, labelling and adequate keeping, in all other sale points these conditions not former keeping.

All the samples were both organoleptical and freshness examined. For the freshness were used salt bath examination and the ovoscope examination. All the samples corresponded with the standards characteristics (IRS 1980).

In table 2 the results of laboratory determinations of eggs samples are presented.

The nutritive value of the eggs was calculated by the medium values from table 2 and by the eggs factors from table 1:

$$\text{- for integral egg } -VN_{10} = 1/10 (1.28 \cdot 13.1 + 0.95 \cdot 11.8 + 0.22 \cdot 0.64 + 69 \cdot 0.051 + 80 \cdot 0.21 + 6.9 \cdot 1.95 + 67 \cdot 0.51 + 67 \cdot 0.06 + 47 \cdot 0.49) = 12.3$$

$$\text{- for the yolk } -VN_{10} = 1/10 (1.28 \cdot 16.3 + 0.95 \cdot 34.0 + 0.22 \cdot 0.9 + 69 \cdot 0.113 + 80 \cdot 0.387 + 6.9 \cdot 2.86 + 67 \cdot 0.53 + 67 \cdot 0.132 + 47 \cdot 0.58) = 18.35$$

### *The Nutritive Value of Eggs*

- for the glair -  $VN_{10} = (1.28 \cdot 10.7 + 0.95 \cdot 0.03 + 0.22 \cdot 0.80 + 69 \cdot 0.006 + 80 \cdot 0.018 + 6.9 \cdot 0.03 + 67 \cdot 0.003 + 67 \cdot 0.006 + 47 \cdot 0.45) = 3.73$

**Table 2.** The chemical composition of the eggs samples

Products		Pr.	L	G	Ca	P	Fe	A	B <sub>1</sub>	B <sub>2</sub>	C
Integral eggs	1	13.7	12.2	0.70	0.052	0.22	1.94	0.47	0.062	0.45	-
	2	13.3	11.3	0.60	0.050	0.18	1.75	0.54	0.058	0.50	-
	3	12.6	11.7	0.63	0.050	0.23	2.07	0.50	0.062	0.51	-
	4	12.9	12.1	0.63	0.050	0.20	2.15	0.50	0.060	0.50	-
	5	13.2	11.9	0.65	0.052	0.22	1.83	0.55	0.060	0.47	-
	$\bar{X}$	13.1	11.8	0.64	0.051	0.21	1.95	0.51	0.060	0.49	-
Yolk		16.3	34.0	0.90	0.113	0.387	2.86	0.53	0.132	0.58	-
Glair		10.7	0.03	0.80	0.006	0.018	0.03	0.003	0.006	0.45	

The energetic values for integral eggs, for the yolk and for the glair were calculated, also. Those are: 387 kcal /100 g yolk; 166 kcal / 100 g integral egg and 47 kcal / 100 g glair.

### **Conclusions**

After the calculations achievement, the  $VN_{10}$  for the eggs was 12.30, for the yolk was 18.35 and for the glair was 3.73. The different nutritive values are due to the various repartitions of the nutritive components, the great nutritive density being in the yolk. For comparison are presented some data from our previous researches: milk –  $NV_{10} = 3.53$  for the milk with 1.8% fat and 5.27 for the milk with 4.03% fat; Telemea cheese -  $NV_{10} = 9.31$ . The energetic value is distinct in all three cases: 387kcal./ 100 g yolk, 166 Kcal./ 100 g integral egg and 47 kcal./ 100 g glair.

### **References**

- Ștef D. (2002). *Merceologia produselor alimentare*. Ed. Mirton, Timișoara
- Segal R. (1983). *Valoarea nutritivă a produselor agroalimentare*. Ed, Ceres, București
- xxx – IRS Standard Român 142-80