

NUTRITIONAL VALUE OF SOME ANIMAL PRODUCTS INCLUDED IN THE STRUCTURE OF BREAKFAST

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Abstract

The establishment of a proper diet should be based on existing nutritional information on food labels and not on other unauthorized sources of information. The present study was performed on 4 groups of food products of animal origin that are frequently consumed at breakfast, namely: meat dishes (Salam de Sibiu, Salam de vară, Tobă, and Lebărușt); cheeses (Emmental and Dalia cheese); acidic products (Sana and Kefir); other products (butter and eggs). For meat preparations, the analyzes performed showed energy levels 3.10-10.88% higher than those specified in the product standards, as well as deviations from the protein and fat contents. Exceedances of normal energy levels were also identified in the dairy products category, especially in cheeses (by 16.89-21.84%), but also in Kefir (by 6.83%) and butter (by 3.55%). ; only at Sana was determined a lower energy value by 0.42%. As for the studied eggs, they had less protein but more lipids, so their energy value was 4.9% higher. In products where salt is used in the manufacturing process, no levels higher than those declared were found. Our study concluded that food of animal origin found in the structure of breakfast has deviations from normal nutritional parameters, probably against the background of differences in the quality of raw materials used in production processes specific to each of them.

Key words: products of animal origin, breakfast, chemical composition, energy value

INTRODUCTION

It is unanimously recognized that food serves as a nutritional support for all vital processes of the consumer, with particular importance in generating well-being, but especially in maintaining health and work capacity [4, 7, 11].

Any imbalance of food in macro or micro constituents leads to the degradation of health, to the accumulation of excess lipids, to disturbances of the general metabolism, etc. [3, 12].

In the hospitality industry, the hotel unit provides the customer with two basic products: accommodation and food; most of the time, the price of the accommodation includes breakfast, an important meal in the daily diet of any person [10].

Breakfast may include if desired, products of animal origin (meat, milk, or egg products), vegetable products (vegetables, fruit, bakery products), and various non-alcoholic beverages [2], each characterized

by different nutritional contents and energy values [1, 5, 6, 9].

From the correct combination of these food categories (in terms of structure and quantities), a breakfast meal can be made to cover the individual nutritional and energy needs [8, 10].

For the reasons mentioned, in this paper, we aimed to establish the chemical composition of some foods of animal origin frequently consumed at breakfast and compare them with levels specified in the product standards specific to each category.

MATERIAL AND METHOD

The food products under study were meat dishes (Sibiu salami, summer salami, Tobă, and Lebărușt), cheeses (Emmental and Dalia cheese), acidic products (Sana and Kefir), and other products (butter and eggs).

To establish the nutritional value of the mentioned products, chemical analyzes were carried out specific to each category (for each product samples were worked from three different producers), namely:

- determination of the dry substance (drying method in the oven) - drying a

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sample in the oven brought to the temperature of + 102°C, up to the constant weight of the residue;

- determination of proteins (Kjeldahl method) - by heating with concentrated sulfuric acid and in the presence of a catalyst, the nitrogen in the organic combinations are transformed into ammonium sulfate. By the addition of a strong base, the ammonia is released and by distillation, it can be caught in a determined amount of acid with the known normality. The excess acid is titrated with a basic solution of the same normality and, by difference, the amount of total nitrogen is determined;
- determination of lipids (Soxhlet method) -extraction of fats from meat preparations with petroleum ether/ethyl ether;
- the fat content of dairy products was determined by the butyrometric method, according to which fat is separated by centrifugation, after prior dissolution with sulfuric acid, in the presence of isoamyl alcohol;
- determination of salt (silver nitrate method) -Ag nitrate in contact with Cl ions gives AgCl; when all the chlorine is precipitated as AgCl, the excess silver

nitrate reacts with the potassium chromate, giving the silver chromate a reddish color.

The energy value of the studied food products was determined by calculation, according to the relation: V.E. (kcal / 100 g) = Protein (g) x 4.1 kcal / g + Carbohydrate (g) x 4.1 kcal / g + Lipid (g) x 9.3 kcal / g.

The data obtained from the analyzes and calculations performed were compared with the values specified by the general standards specific to each of the products under study.

RESULTS AND DISCUSSIONS

Nutritional value of meat dishes. In the case of Sibiu Salami, higher levels were detected for the protein content (by 0.41%) and the salt content (by 0.05%) and lower for the lipid content (by 0.09%). In terms of energy, this product had 16.44 more calories than the standard product (tab. 1).

In summer salami, higher values were recorded for fat content (0.81%) and salt content (0.15%) and lower for protein content (1.58%); compared to the product standard, the summer salami analyzed by us had a higher energy level by 6.51 kcal / 100 g (tab. 2).

Table 1 Nutritional and energy value of "Salam de Sibiu"

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	70	70.37	+0.37
Proteins (%)	21	21.41	+0.41
Fats (%)	45	44.91	-0.09
Salt (%)	4	4.05	+0.05
Energetic value (kcal/100g)	489	505.44	+3.36

Table 2 Nutritional and energy value of "Salam de vară"

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	34	33.37	-0.63
Proteins (%)	14	12.41	-1.58
Fats (%)	17	17.81	+0.81
Salt (%)	3	3.15	+0.15
Energetic value (kcal/100g)	210	216.51	+3.10

In the case of the pork drum product, the analyzes performed revealed lower levels for protein (by 1.4%) and salt (by 0.07%) and higher for fat (by 1.16%); and in this case the declared energy value was exceeded (by 14.15 kcal / 100 g) (tab. 3).

The last meat preparation analyzed was Lebărvușt, for which higher fat (1.56%) and lower protein (2.91%) and salt (0.01%) were found; the energy value resulting from the calculation was 277.19 kcal / 100 g, higher by 27.19 kcal than the declared one (tab. 4).

Nutritional value of cheeses. For Emmental cheese, higher values were obtained for the protein content (by 1.08%) and lower for fat (by 0.43%) and salt (by 0.17%); the energy value of the mentioned product was 431.33 kcal / 100 g, compared to 369 kcal as specified for this type of cheese (tab. 5).

Dalia cheese also had a higher content of protein (by 0.61%) and a lower content of fat (by 0.51%) and salt (by 0.24%); from an energy point of view, this assortment of cheese had 71.86 more kcalories / 100 g than the product specification (tab. 6).

Table 3 Nutritional and energy value of "Tobă"

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	30	29.69	-0.31
Proteins (%)	10	8.6	-1.4
Fats (%)	17	18.16	+1.16
Salt (%)	3	2.93	-0.07
Energetic value (kcal/100g)	190	204.15	+7.45

Table 4 Nutritional and energy value in "Lebărvușt"

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	37	35.64	-1.36
Proteins (%)	8	5.09	-2.91
Fats (%)	26	27.56	+1.56
Salt (%)	3	2.99	-0.01
Energetic value (kcal/100g)	250	277.19	+10.88

Table 5 Nutritional and energy value of Emmental cheese

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	65	65.48	+0.48
Proteins (%)	30	31.08	+1.08
Fats (%)	33	32.57	-0.43
Salt (%)	2	1.83	-0.17
Energetic value (kcal/100g)	369	431.33	+16.89

Table 6 Nutritional and energy value of Dalia cheese

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	62	61.86	-0.17
Proteins (%)	28	28.61	+0.61
Fats (%)	31	30.49	-0.51
Salt (%)	3	2.76	-0.24
Energetic value (kcal/100g)	329	400.86	+21.84

Nutritional value of acidic dairy products. Chemical analyzes performed on the Sana product revealed lower contents for both proteins (by 0.49%) and fat (by 0.02%), hence a lower energy level than the standard (65.72 kcal vs. 66 kcal) (tab. 7).

For Kefir, higher than the standard levels were determined for proteins (by 0.73%), but also fats (by 0.01%), so that the energy level was also higher by 4.44 kcal / 100 g (tab. 8).

Nutritional value of other products of animal origin. From this category of

products, butter with 82% fat was analyzed, with a higher protein content (by 0.14%), but lower in lipids (with 0.09%) and salt (with 0,32%). The energy value of the analyzed butter assortment was 770.4 kcal / 100 g, compared to 744 kcal as the normal value.

Eggs, consumers' favorites for breakfast, had 1.05% less protein but more fat (0.93%), so their determined energy value was 145.81 kcal / 100 g, compared to 139 kcal with which the hens are credited (tab. 10).

Table 7 Nutritional and energy value of Sana

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	12	11.49	-0.51
Proteins (%)	8,4	7.91	-0.49
Fats (%)	3,6	3.58	-0.02
Energetic value (kcal/100g)	66	65.72	-0.42

Table 8 Nutritional and energy value of Kefir

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	12	12.74	+0.74
Proteins (%)	8,7	9.43	+0.73
Fats (%)	3,3	3.31	+0.01
Energetic value (kcal/100g)	55	69.44	+6.83

Table 9 Nutritional and energy value of butter (82% fat)

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	84	84.73	+0.73
Proteins (%)	2	2.14	+0.14
Fats (%)	82	81.91	-0.09
Salt (%)	1	0.68	-0.32
Energetic value (kcal/100g)	744	770.40	+3.55

Table 10 Nutritional and energy value of eggs

The analyzed parameter	Product standard	Determined values	The difference from the standard (+ / -) (%)
DM (%)	22.2	22.08	-0.12
Proteins (%)	12.5	11.45	-1.05
Fats (%)	9.7	10.63	+0.93
Energetic value (kcal/100g)	139	145.81	+4.90

CONCLUSIONS

The analyzed meat preparations showed higher energy levels than those specified in the standards (by 3.10-10.88%), but also deviations from the protein contents (higher by 0.41% and, respectively, lower by 1, 40-2.91%) and lipids (lower by 0.09% or higher by 0.81-1.56%); none of the four meat preparations exceeded the normal salt content.

Dairy products were characterized by higher than normal energy levels, especially cheeses (by 16.89-21.84%), Kefir (by 6.83%), and butter (by 3.55%); for Sana alone, it was 0.42% lower.

The protein content of the analyzed dairy products was higher by 0.14-1.08%, while the fat content was lower by 0.01-0.43%.

The studied eggs had less protein (1.05%), but more lipids (by 0.93%), so their energy value was higher by 4.90%.

In conclusion, it can be stated that foods of animal origin that are part of the structure of the breakfast table have deviations from normal nutritional parameters, probably due to differences in the quality of raw materials used in the production processes specific to each of them.

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