

THE FOOD INVESTIGATION CALCULATOR, A USEFUL TOOL IN MEDICINE OFFICES FROM KINDERGARTENS

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Abstract:

OBJECTIVES: The Food Investigation Calculator was created due to the practical necessity to centralize and to interpret fast, efficient, correct and unitary the data showing the quantities of food consumed on average per day by the kids from kindergartens with an extended program with their own canteens.

METHODE: The Food Investigation Calculator is an Excel 2010 program that includes a data base with that characteristics of the food products (proteins, carbohydrates, calories and lipids), 10 daily worksheets and a statistic conclusion of the data registered in the in all 10 days of investigation.

RESULTS: It calculates the number of calories per child per day, the proteins, the carbohydrates and the lipids contained by the quantity of nourishment used to prepare food in that particular day. In the end, it centralizes all this data, giving information about the average ratios per child for 10 days and compares them to the estimated daily requirement provided in the tables of the legislation in force.

CONCLUSIONS: A correct and fast daily analysis of the quantitative and qualitative characteristics of the ingredients used in the preparation of food in the canteens of the kindergartens with extended program, leads to the remedy of the deviations in due time and to ensure a balanced diet among preschoolers.

KEY WORDS: food investigation, calculator, kindergartens

Introduction

Ensuring a balanced diet for children in schools is a major goal, for which a good collaboration be-

tween the management and the medical staff in kindergartens is necessary. It is important to create a menu adapted qualitatively and quantitatively to the growth and development needs of children.

The quantitative analysis of the nutrition provided to children in kindergartens is carried out by conducting the food investigation, included in the attributions of the school medical staff and regulated by the following legislative acts [1,2] that are in force:

- **Order no. 1563/2008** issued by the Ministry of Health for the approval of the List of foods not recommended for preschoolers and school children and of the principles underlying a healthy diet for children and adolescents.

- **Joint Order no.1668 / 5298/2011** issued by the Ministry of Education, Research, Youth and Sports and the Ministry of Health - for approving the Methodology on examining the health of preschoolers and students in state and private authorized / accredited educational institutions, on granting free health care and to promote a healthy lifestyle.

Thus, in **M.H. Order nr. 1563/2008**, Annex 4, art. 1 states: "For the assessment of the quantities of food consumed on average per day by a child, a calculation will be made based on food sheets taken out of storage daily, for a period of **10 working days** (in two consecutive weeks) in **February , May and October**. The quantities from the food groups, cumulated on the 10 days, will be divided by the total number of consumers in the 10 days, obtaining the average ration per child, which will be compared with the recommended rations from table no. 1 "The estimated daily requirement of different food groups for a healthy diet in children and adolescents."

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The *M.E.R.Y.S. and M.H. Joint Order nr.1668/ 5298/2011* states the following:

“I. Attributions of the **school doctor**:

a) Approves the menus in kindergartens and school canteens.

b) Supervises the conduct of regular food investigations to verify compliance with a healthy diet.“

”II. Attributions of the **nurse**:

a) Participates in the preparation of weekly menus and in the periodic conduct of investigations on the nutrition of preschoolers and students;

c) Assists in removing food from the warehouse and controls their organoleptic quality, signing the food sheet on food quality.

d) Checks daily the organoleptic properties of the food taken out of the warehouse and the functioning of the refrigerating units in the food block. ”

The quality of menus in kindergartens with extended program and the identification of methods to optimize these menus in accordance with the nutritional needs of preschoolers was analyzed in studies conducted by teams of professionals in Tg Mureş [3,4,5]. We further propose a computer program for quantitative analysis of menus, which can be done in all kindergartens in the country.

To carry out the food investigation, the following are needed: 10 consecutive storage sheets from October, February and May (quantities, in kilograms, of ingredients used to prepare food), the menu for the 10 days and the number of children present at the table.

In the vast majority of schools in the country, the recording and processing of this data is done using a pen / pencil, the calculation for each food taken out of the pantry is time consuming. For this reason, I propose the use of the Food Investigation Calculator, even if the resistance to change and the lack of equipment / computers of school medical offices are justified obstacles in its use.

Program description:

The Food Investigation Calculator is an Excel 2010 program consisting of 12 worksheets:

- The first worksheet is called ”*PRODUCT VALUES*” and it is a database of 289 food products,

containing the net quantity needed for preparing the meals, but also the composition per 100 grams in proteins (vegetal proteins, animal proteins, total proteins), lipids (vegetal, animal, total), carbohydrates, iron, calcium, calories, the group of aliments to which it belongs (i.e. milk and dairy products, vegetables, fruits, etc), and the coefficient of its food equivalent.

- 10 worksheets called „*DAILY FILE*”, numbered from 1 to 10, the exact amount of days needed for the food investigation.

- The final worksheet is called “*KINDERGARTEN FOOD INVESTIGATION*” and it centralizes, based on pre-established formulas and data entered in the worksheets, all the information necessary to compare the results obtained with the ratios recommended by law.

It is important not to change the names of these sheets, as the calculation formulas will no longer work properly and the program will be compromised.

The characteristics of the products (proteins, lipids, carbohydrates, calories, etc.) were taken from the food labels, from the tables with these data published in specialized volumes [6,7], and from various specialized websites [8,9]. Other foods used in the canteen can be easily entered in the table by adding a new row or the data of an already introduced product can be modified according to the manufacturer’s label.

The daily worksheet includes the following: the name of the kindergarten, the date, the daily menu and a table. The table shows: the number of children present at the table, the ingredients used to prepare the food and their quantity in kilograms (the rows in columns B and C). Of great help are the dropdowns that facilitate the quick selection of the food to be introduced. The computer will display the amount of protein, fat, carbohydrates and calories corresponding to each food, each child, but also separately on each meal (breakfast, snacks, lunch), as well as food equivalents, in kilograms, corresponding to the product group. There are 13 product groups (eg group 1: milk and dairy products in milk equivalent) [1]. In order to be able to calculate the calories on each meal, in column B the corresponding rows are numbered and marked with different colours (breakfast - red, snack at 10 o’clock - green, lunch - yellow, snack at 16 o’clock - blue).

Image nr 1. "PRODUCT VALUES" worksheet

Nr crt.	NUME ALIMENT	NET	PROTEINE VEGETALE	PROTEINE ANIMALE	PROTEINE TOTALE	LIPIDE VEGETALE	LIPIDE ANIMALE	LIPIDE TOTALE	GLUCIDE	Fier (mg)	Calciu (mg)	CALORII/100g	grup produse	coeficient echivalent		
1	ARDEI GRAS GALBEN	0.73	1.1		1.1	0.2		0.2	4.6	0.43	7	25	10	1		
2	ARDEI GRAS ROȘU	0.73	1.3		1.3	0.4		0.4	7.3	0.43	7	39	10	1		
3	ARDEI GRAS VERDE	0.73	1.1		1.1	0.2		0.2	4.6	0.43	7	25	10	1		
4	ARDEI KAPIA	0.75	0.99		0.99	0.3		0.3	6.03	0.43	7	26	10	1		
5	BAME	0.9	1.87		1.87	0.21		0.21	4.51	0.28	77	22	10	1		
6	BANANĂ	0.68	1.3		1.3	0.4		0.4	15.7	0.26	5	73	12	1		
7	BATON	1	7.83		7.83	3.27		3.27	57.06			296.4	8	1		
8	BATON NESQUIK	1	7.2		7.2	13.6		13.6	66.6			418	13	8	0.27	0.5
9	BISCUȚI DE CASĂ	1	9.8		9.8	6.8		6.8	78			392	8	13	0.7	0.2
10	BISCUȚI CHOCO MINIS MILKA	1	7.2		7.2	24		24	60			486	8	13	0.7	0.2
11	BISCUȚI DIGESTA	1	7.1		7.1	22.5		22.5	65.5			496	8	13	0.7	0.2
12	BISCUȚI MAIA	1	8.8		8.8	9.2		9.2	59.4			353	8	13	0.7	0.2
13	BISCUȚI PICNIC	1	13.4		13.4	3.9		3.9	60.7			346				
14	BISCUȚI POIENI	1	6.6		6.6	24.4		24.4	65.5			446	8	13	0.7	0.2
15	BISCUȚI OBIȘNUIȚI	1	9		9	9		9	70.3			409	8	13	0.7	0.2
16	BISCUȚI TEDI	1	8.8		8.8	3	3.5	6.5	71			441	8	13	0.7	0.2
17	BISCUȚI BELVITA	1	8.2		8.2	16		16	67			455	8	13	0.7	0.2
18	BOIA DE ARDEI DULCE	1	14.14		14.14	12.89		12.89	53.29	21.14	229	282	10		1	
19	BORS	1	0.4		0.4			0	0.6			4				1
20	BRÂNZĂ DE BURDUȘ	1		24	24		26	26	1.5	0.8	700	346	1		4.5	
21	BRÂNZĂ DULCE DE VACĂ	1		11.12	11.12		4.3	4.3	3.38	0.5	250	98	1		4	
22	BRÂNZĂ MOZZARELLA	1		22.17	22.17		22.14	22.14	2.4	0.44	505	299	1		4	
23	BRÂNZĂ TELEMĂA DE OI	1		10.9	10.9		24	24	1	0.6	500	270	1		4.5	
24	BRÂNZĂ TELEMĂA DE VACĂ	1		17	17		17.2	17.2	1	0.6	500	243	1		5.5	
25	BRÂNZĂ TOPITĂ	1		11.2	11.2		26.9	26.9	6	0.5	250	309	1		7	
26	BRÂNZICĂ ALMETTE	1		6	6		26	26	3	0.5	250	270	1		4	
27	BRÂNZICĂ FAGĂRAȘ	1		11	11		6	6	3	0.5	250	98	1		4	
28	BRÂNZICĂ PHILADELPHIA	1		5.9	5.9		26	26	3	0.5	250	270	1		4	
29	BRÂNZOICĂ	1	3	4.8	7.8	3	4.6	7.6	27			214	8	13	0.7	0.2
30	BRIOȘĂ(MAGDALENĂ)	1	4	5.5	9.5	3	4.5	7.5	57.8	0.5	250	457	8	13	0.7	0.2
31	BRIOȘĂ CU FULGI DE COCOS	1	4	5.5	9.5	3	4.5	7.5	57.8	0.5	250	287.05	8	13	0.7	0.2
32	BROCOLI	0.8	2.38		2.38	0.41		0.41	7.18	0.67	40	35	10		1	
33	BROWNIE CU STAFIDE	1	4	5.5	9.5	3	4.5	7.5	57.8	0.5	250	466.23				
34	BULION	1	2.7		2.7	0.6		0.6	8.3	2	70	51	10		6	

Image nr 2. "DAILY WORKSHEET"

GRĂDINIȚA: P.P.NR.57
DATA: 2/16/2021

MENIU:
MIC DEJUN: OREZ CU LAPTE

CALORII/COPIL/MASĂ
MIC DEJUN: 271.20 kcal

GUSTARE ORA 10:00: BANANĂ
GUSTARE(10): 29.78 kcal

PRÂNZ: SUPĂ DE LEGUME CU GĂLUȘTE
PULPE DE PUI LA CUPTOR CU PIURE DE CARTOFI
PRÂNZ: 628.61 kcal

GUSTARE ORA 16: PLĂCINTĂ CU BRÂNZĂ
BANANĂ
GUSTARE(16): 338.80 kcal

NUMĂR COPII: 100
TOTAL CALORII/COPIL/ZI: 1268.39 kcal

NR. CRT.	PRODUS	CANTITATE		PROTEINE VEGETALE	PROTEINE ANIMALE	PROTEINE TOTALE	LIPIDE VEGETALE	LIPIDE ANIMALE	LIPIDE TOTALE	GLUCIDE	FIER (mg)	CALCIU (mg)	CALORII	ECHIVALENT ÎN KG.	GRUP PRODUSE
		BRUTĂ	NETĂ												
	Necesar zilnic (copii 4-6 ani)			12-24,8g	23,2-47,2g	35,2-72g	8-17,6g	25,6-52g	33,6-69,6g	139,2-147,2g	8-10mg	800-1100mg	1040-1840kcal		
1	OREZ	3	3	243.00	0.00	243.00	36.00	0.00	36.00	2765.00	15.00	450.00	10620.00	3	0
2	LAPTE DE VACĂ 3,5%	20	20	0.00	700.00	700.00	0.00	700.00	700.00	10.00	10.00	25000.00	12400.00	20	0
3	ZAHĂR ALB	1	1	0.00	0.00	0.00	0.00	0.00	0.00	1000.00	0.50	10.00	4100.00	1	0
4	BANANĂ	6	4.08	53.04	0.00	53.04	16.32	0.00	16.32	640.56	10.61	204.00	2978.40	4.08	0
5	BANANĂ	30	20.4	265.20	0.00	265.20	81.60	0.00	81.60	3202.80	53.04	1020.00	14892.00	20.4	0
6	PLĂCINTĂ CU BRÂNZĂ(Firma)	5.5	5.5	165.00	264.00	429.00	165.00	253.00	418.00	1485.00	0.00	0.00	18987.65	3.85	1.1
7	MORCOVI	2	1.84	23.92	0.00	23.92	5.52	0.00	5.52	161.92	18.40	920.00	809.60	1.84	0
8	ARDEI GRAS GALBEN	1	0.73	0.00	8.03	1.46	0.00	1.46	33.58	3.14	51.10	182.50	0.73	0	
9	CEAPĂ USCATĂ	2	1.88	28.20	0.00	28.20	3.76	0.00	3.76	169.20	3.95	432.40	846.00	1.88	0
10	TELINĂ RĂDĂCINĂ	1.5	0.9	13.50	0.00	13.50	2.70	0.00	2.70	53.10	9.00	504.00	297.00	0.9	0
11	PĂȘTĂRNAC	1	0.8	12.00	0.00	12.00	4.00	0.00	4.00	120.00	4.64	296.00	576.00	0.8	0
12	GRIS	2	2	224.00	0.00	224.00	16.00	0.00	16.00	1466.00	30.00	400.00	7080.00	2	0
13	OU DE GĂINĂ INTEGRAL	1	1	0.00	140.00	140.00	0.00	120.00	120.00	6.00	28.00	600.00	1710.00	1	0
14	ULEI DE FLOAREA SOARELUI	0.5	0.5	0.00	0.00	0.00	500.00	0.00	500.00	0.00	0.15	0.00	4420.00	0.5	0
15	CARNE DE PUI(PULPE PUI DEZOSATE)	11	9.35	0.00	1795.20	1795.20	0.00	794.75	794.75	18.70	64.52	841.50	14492.50	9.35	0
16	CARTOFI MATURI	20	16	336.00	0.00	336.00	32.00	0.00	32.00	3040.00	102.40	1600.00	14080.00	16	0
17	LAPTE DE VACĂ 3,5%	2	2	0.00	70.00	70.00	0.00	70.00	70.00	96.00	1.00	2500.00	1240.00	2	0
18	BULION	1.16	1.16	31.32	0.00	31.32	6.96	0.00	6.96	96.28	23.20	812.00	591.60	6.96	0
19	PĂINE DE GRĂU ALBĂ	5	5	430.00	0.00	430.00	60.00	0.00	60.00	2295.00	75.00	600.00	11700.00	3.8	0
20	UNT80%	0.6	0.6	0.00	48.00	48.00	0.00	480.00	480.00	15.00	1.20	90.00	4836.00	0.6	0

NR.	1	2	3	4	5	6	7	8	9	10	11	12	13
GRUP PRODUSE	Lapte și produse din lapte(în echivalent lapte)	Carne și prep.din carne (în echivalent carne)	Peste și prep.din pește(în echivalent pește)	ouă	Grăsimi totale	Grăsimi animale	Grăsimi vegetale	Produse cerealiere(în echivalent făină)	Cartofi	Alte legume	Leguminoase uscate	Fructe	Zahăr și produse zaharose
Valori realizate(g/copil/zi)	220.0	93.5	0.0	10.0	33.5	24.2	9.3	126.5	160.0	131.1	0.0	244.8	21.0
Necesar estimativ(g/copil/zi)	525	63.75	11.25	26.25	24	15	9	120	112.5	165	3.75	97.5	33.75

In the worksheet “*KINDERGARTEN FOOD INVESTIGATION*” the values achieved over 10 days are compared with the values recommended in the

legislation [1], these values are interpreted and deviations from the average are calculated.

Image nr 3. Tables containing the values obtained over 10 days

PROTEINE VEGETALE(COPII 4-6 ANI)						PROTEINE ANIMALE(COPII 4-6 ANI)						PROTEINE TOTALE(COPII 4-6 ANI)					
DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata	DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu maxim (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata	DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu maxim (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata
3/8/2021	12	16.8	19.2	24.8	12.83	3/8/2021	23.2	32	36.8	47.2	28.35	3/8/2021	35.2	48.8	56	72	41.19
2/9/2021	12	16.8	19.2	24.8	24.69	2/9/2021	23.2	32	36.8	47.2	28.96	2/9/2021	35.2	48.8	56	72	53.65
2/10/2021	12	16.8	19.2	24.8	14.20	2/10/2021	23.2	32	36.8	47.2	35.42	2/10/2021	35.2	48.8	56	72	49.63
2/11/2021	12	16.8	19.2	24.8	36.12	2/11/2021	23.2	32	36.8	47.2	25.47	2/11/2021	35.2	48.8	56	72	61.59
2/12/2021	12	16.8	19.2	24.8	15.40	2/12/2021	23.2	32	36.8	47.2	29.71	2/12/2021	35.2	48.8	56	72	45.11
2/15/2021	12	16.8	19.2	24.8	14.88	2/15/2021	23.2	32	36.8	47.2	32.11	2/15/2021	35.2	48.8	56	72	46.99
2/16/2021	12	16.8	19.2	24.8	18.33	2/16/2021	23.2	32	36.8	47.2	30.17	2/16/2021	35.2	48.8	56	72	48.50
2/17/2021	12	16.8	19.2	24.8	16.03	2/17/2021	23.2	32	36.8	47.2	19.59	2/17/2021	35.2	48.8	56	72	35.62
2/18/2021	12	16.8	19.2	24.8	30.06	2/18/2021	23.2	32	36.8	47.2	24.81	2/18/2021	35.2	48.8	56	72	54.87
2/19/2021	12	16.8	19.2	24.8	15.42	2/19/2021	23.2	32	36.8	47.2	29.64	2/19/2021	35.2	48.8	56	72	45.06
TOTAL	12	16.8	19.2	24.8	19.7972323	TOTAL	23.2	32	36.8	47.2	28.4223546	TOTAL	35.2	48.8	56	72	48.21959

LIPIDE VEGETALE(COPII 4-6 ANI)						LIPIDE ANIMALE(COPII 4-6 ANI)						LIPIDE TOTALE(COPII 4-6 ANI)					
DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata	DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu maxim (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata	DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu maxim (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata
3/8/2021	8	11.2	13.6	17.6	18.79	3/8/2021	25.6	35.2	40.8	52	17.07	3/8/2021	33.6	46.4	54.4	69.6	35.86
2/9/2021	8	11.2	13.6	17.6	34.58	2/9/2021	25.6	35.2	40.8	52	25.68	2/9/2021	33.6	46.4	54.4	69.6	60.26
2/10/2021	8	11.2	13.6	17.6	22.92	2/10/2021	25.6	35.2	40.8	52	54.70	2/10/2021	33.6	46.4	54.4	69.6	77.63
2/11/2021	8	11.2	13.6	17.6	44.92	2/11/2021	25.6	35.2	40.8	52	18.30	2/11/2021	33.6	46.4	54.4	69.6	63.22
2/12/2021	8	11.2	13.6	17.6	10.58	2/12/2021	25.6	35.2	40.8	52	38.87	2/12/2021	33.6	46.4	54.4	69.6	49.46
2/15/2021	8	11.2	13.6	17.6	24.79	2/15/2021	25.6	35.2	40.8	52	21.05	2/15/2021	33.6	46.4	54.4	69.6	45.84
2/16/2021	8	11.2	13.6	17.6	9.31	2/16/2021	25.6	35.2	40.8	52	24.18	2/16/2021	33.6	46.4	54.4	69.6	33.49
2/17/2021	8	11.2	13.6	17.6	14.80	2/17/2021	25.6	35.2	40.8	52	19.65	2/17/2021	33.6	46.4	54.4	69.6	34.45
2/18/2021	8	11.2	13.6	17.6	17.58	2/18/2021	25.6	35.2	40.8	52	23.30	2/18/2021	33.6	46.4	54.4	69.6	40.88
2/19/2021	8	11.2	13.6	17.6	12.48	2/19/2021	25.6	35.2	40.8	52	36.07	2/19/2021	33.6	46.4	54.4	69.6	48.55
TOTAL	8	11.2	13.6	17.6	21.07056853	TOTAL	25.6	35.2	40.8	52	27.8887457	TOTAL	33.6	46.4	54.4	69.6	48.95931

GLUCIDE (COPII 4-6 ANI)						CALORII (COPII 4-6 ANI)						CALCIU(COPII 4-6 ANI)						FIER(COPII 4-6 ANI)					
DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata	DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu maxim (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata	DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu maxim (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata	DATA	Necesar minim (80% din necesarul estimativ/24h)	Necesar mediu minim (80%din necesarul estimativ/24h)	Necesar mediu maxim (80%din necesarul estimativ/24h)	Necesar maxim (80%din necesarul estimativ/24h)	Valoare realizata
3/8/2021	139.2	176	192	247.2	138.43	3/8/2021	1040	1440	1840	1080.43	3/8/2021	640	720	800	338.88	3/8/2021	6.4	7.2	8	8	8	8	8
2/9/2021	139.2	176	192	247.2	178.64	2/9/2021	1040	1440	1840	1493.49	2/9/2021	640	720	800	107.99	2/9/2021	6.4	7.2	8	8	8	8	8
2/10/2021	139.2	176	192	247.2	164.54	2/10/2021	1040	1440	1840	1589.16	2/10/2021	640	720	800	390.03	2/10/2021	6.4	7.2	8	8	8	8	8
2/11/2021	139.2	176	192	247.2	246.90	2/11/2021	1040	1440	1840	1799.81	2/11/2021	640	720	800	372.93	2/11/2021	6.4	7.2	8	8	8	8	8
2/12/2021	139.2	176	192	247.2	165.45	2/12/2021	1040	1440	1840	1332.57	2/12/2021	640	720	800	442.87	2/12/2021	6.4	7.2	8	8	8	8	8
2/15/2021	139.2	176	192	247.2	144.28	2/15/2021	1040	1440	1840	1210.30	2/15/2021	640	720	800	234.16	2/15/2021	6.4	7.2	8	8	8	8	8
2/16/2021	139.2	176	192	247.2	171.24	2/16/2021	1040	1440	1840	1268.39	2/16/2021	640	720	800	363.31	2/16/2021	6.4	7.2	8	8	8	8	8
2/17/2021	139.2	176	192	247.2	128.62	2/17/2021	1040	1440	1840	1005.22	2/17/2021	640	720	800	346.66	2/17/2021	6.4	7.2	8	8	8	8	8
2/18/2021	139.2	176	192	247.2	203.33	2/18/2021	1040	1440	1840	1553.09	2/18/2021	640	720	800	409.63	2/18/2021	6.4	7.2	8	8	8	8	8
2/19/2021	139.2	176	192	247.2	173.58	2/19/2021	1040	1440	1840	1325.66	2/19/2021	640	720	800	267.87	2/19/2021	6.4	7.2	8	8	8	8	8
TOTAL	139.2	176	192	247.2	171.5014454	TOTAL	1040	1440	1840	1365.813721	TOTAL	640	720	800	327.4342	TOTAL	6.4	7.2	8	8	8	8	4.9

The worksheets as well as the conclusions of the food investigation can be printed and archived at the end of each month (October, February, May). The conclusions of the investigation are communicated to the kindergarten’s principal, so that if major discrepancies are found proper corrective measures could be taken.

This program has the advantage that it can be used every day, so that, at any time, completing the 10 daily worksheets, we can have an image of compliance or not with the daily amounts recommended for children attending kindergarten.

Image nr 4. Table containing the analyzed results and the deviations from the average

ANCHETĂ ALIMENTARĂ
GRĂDINIȚA CU P.P. NR.
LUNA: FEBRUARIE AN: 2021

	Valoare realizată /copil	Necesar estimat/copil (6-6ani) 100%	Necesar estimat/copil (4-6ani) 80%	Interpretare	Abatere de la medie pe necesar estimat 80%	Necesar estimat/copil (4-6ani) 75%	Interpretare	Abatere de la medie pe necesar estimat 75%	Valoare realizată(%)	Valori normale(%)	Interpretare	Abatere (%)
calorii	1365.81	1800cal (1300-2300)	1440cal (1040-1840)	Valoarea realizată este în limitele necesarului estimat80%	-5.15	1350cal (975-1725)	Valoarea realizată este în limitele necesarului estimat75%	1.17				
proteine												
totale	48.22	61-70g (44-90)	48,8-56,9 (media:52,85) (35,2-72)	Valoarea realizată este în limitele necesarului estimat80%	-8.76	45,75-52,5 (media:47,62) (33-67,5)	Valoarea realizată este în limitele necesarului estimat75%	1.26	14.47	14-16%(media 15%) din valoarea calorică realizată	VALOAREA REALIZATĂ ESTE ÎN LIMITE NORMALE	0.00
animale	28.42	40-46g (29-59)	32-36,8 (media:34,4) (23,2-47,2)	Valoarea realizată este în limitele necesarului estimat80%	-17.38	30-34,5 (media:32,5) (21,75-44,25)	Valoarea realizată este în limitele necesarului estimat75%	-12.55	58.94	65% din proteinele totale	Valoarea realizată este sub valoarea normală	-6.06
vegetale	19.80	21-24g (15-31)	16,8-19,2 (media:18) (12-24,8)	Valoarea realizată este în limitele necesarului estimat80%	9.98	15,75-18 (media:16,875) (11,25-23,25)	Valoarea realizată este în limitele necesarului estimat75%	17.32	41.06	35% din proteinele totale	Valoarea realizată depășește valoarea normală	6.06
lipide												
totale	48.96	58-66g (42-87)	46,4-54,4 (media:50,4) (33,6-69,6)	Valoarea realizată este în limitele necesarului estimat80%	-2.86	43,5-51 (media:47,25) (31,5-65,25)	Valoarea realizată este în limitele necesarului estimat75%	3.62	32.62	30-35%(media 32,5%) din valoarea calorică realizată	VALOAREA REALIZATĂ ESTE ÎN LIMITE NORMALE	0
animale	27.89	44-51g (32-65)	35,2-40,8 (media:38) (25,6-52)	Valoarea realizată este în limitele necesarului estimat80%	-26.61	33-38,25 (media:35,75) (24-48,75)	Valoarea realizată este în limitele necesarului estimat75%	-21.99	56.96	75% din lipidele totale	Valoarea realizată este sub valoarea normală	-18.04
vegetale	21.07	14-17g (10-22)	11,2-13,6 (media:12,4) (8-17,6)	Valoarea realizată depășește limita maximă a necesarului estimat80%	69.92	10,5-12,75 (media:11,625) (7,5-16,5)	Valoarea realizată depășește limita maximă a necesarului estimat75%	81.25	43.04	25% din lipidele totale	Valoarea realizată depășește valoarea normală	18.04
glucide	171.50	220-340g (174-309)	176-192 (media:184) (139,2-247,2)	Valoarea realizată este în limitele necesarului estimat80%	-6.79	165-180 (media:172,5) (130,5-231,75)	Valoarea realizată este în limitele necesarului estimat75%	-0.58	51.48	50-55%(media 52,5%) din valoarea calorică realizată	VALOAREA REALIZATĂ ESTE ÎN LIMITE NORMALE	0
calciu	327.43	900 (800-1000)	720 (640-800)	Valoarea realizată este sub limita minimă a necesarului estimat80%	-54.52	675 (600-750)	Valoarea realizată este sub limita minimă a necesarului estimat75%	-51.49				
fier	4.87	9 (8-10)	7,2 (6,4-8)	Valoarea realizată este sub limita minimă a necesarului estimat80%	-32.36	6,75 (6-7,5)	Valoarea realizată este sub limita minimă a necesarului estimat75%	-27.85				

Conclusions

A correct and fast daily analysis of the quantitative and qualitative characteristics of the ingredients used in the preparation of food in the canteens of the kindergartens with extended program, leads to the remedy of the deviations in due time and to ensure a balanced diet among preschoolers.

The program can be downloaded from the "Download" section of the <http://www.medicinascolara.ro> website.

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