



Breakfast Optimization Using the Solver Function

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ABSTRACT

Cheese is a solid food prepared by curdling the milk of cows, goats, sheep and other animals. Coagulates milk using rennet and lactic bacteria for acidification. Bacteria acidify the milk and play an important role in defining the texture and flavor of many kinds of cheese.

Introduction of a food such as cheese in the contents of a breakfast menu is a thing of great importance due to the contribution that brings the body. We highlight these work through the following exercise and the importance of association with herbs cheese. To choose and to make arguments that will support the recommended version we use of the Excel Solver Function. During the scientific paper will demonstrate this function, the importance of optimizing a variant of breakfast by using a key that will bring added value to an optimal price.

Keywords : nutrient intake, breakfast, price

Chapter 1. INTRODUCTION

Breakfast is a meal that is served in the morning. It is a largely considered to be the most important meal of the day. Usually consists of energy-rich products, such as bread, ham, cheese, dairy, grains, vegetables tender, marmalade, eggs, etc., and served with hot drinks such as tea, milk or coffee, or juice.

Here are 5 reasons you need to serve a healthy breakfast:

- Breakfast helps to stimulate and accelerate metabolism and therefore encourages calorie burning rather than storing them
- Breakfast increases nutrient intake and the amount of fiber, vitamins and minerals, especially calcium, iron and magnesium in the body are higher
- Breakfast help prevent hunger and thus be consumed fewer calories and unhealthy foods during the day
- Breakfast improves memory and concentration levels. Also, the mood will be improved in those who enjoy this meal of the day, compared to people who do not serve breakfast
- Breakfast helps maintain weight, increasing your chances of maintaining a healthy number of pounds.

Chapter 2: MATERIALS AND METHODS

For a good choice of breakfast, we must consider that it apor-dul nutritional value table will have on the body.

We choose from two variants breakfast.

Option 1	
Product	Quantity
Buffalo cheese	110
Boiled egg	100

Sibiu Salami	40
Wheat bun	70
Tomate	100
Option 2	
Product	Quantity
Cow Cheese	110
Boiled egg	100
Sibiu Salami	40
Wheat bun	70
Tomate	100

Table no.1. Option 1 for breakfast

Table no.2. Option 2 for breakfast

Option 3	
Product	Quantity
Cow cheese with parsley	105
Boiled egg	100
Sibiu Salami	40
Wheat bun	70
Tomate	100

Table no.3. Option 3 for breakfast, improvement cheese with parsley

For version no. 3, we choose cow cheese with greens (with parsley). Parsley is an excellent source of vitamin A, C and K, folate, calcium, iron, magnesium, potassium, protein, vi-

tamin E, thiamin, riboflavin, niacin, vitamin B6, phosphorus and zinc.

Advantages of using parsley daily mass:

- The antibiotic, tonic, anti-toxic;
- Promotes the uptake of iron by the body;
- Increases vascular resistance;
- Contribute to the formation of red blood cells, teeth and bones;
- Plays a role regulating blood sugar and cholesterol;
- Reduces periods of convalescence;
- Delay the onset of cataracts and reduce its severity by approximately 50%;
- Prevent fat storage in the liver and ensure normal functioning of the liver cell;
- Are allergic activities, is a natural laxative;
- Decreases the incidence of clots in blood vessels and many others.

To choose and to make arguments that will support the recommended version we use Solver function.

That's according to excel by introducing parameters and establish an objective function indicates the ideal solution.

Steps introducing parameters are:

1. Introduce the target cell. This cell contains a formula for calculating the objective function. This is done by direct introduction.

2. Introduce objective type. In this case we want to minimize the price to get the menu option recommended. Choose target "min" by selecting the button "min".



Figure no.1. Entering the objective function and indication variant «min» or «max».

3. Introduce cells that can be modified to obtain optimal solution optimal variant breakfast. So the optimal solution is obtained by varying the quantities of products consumed at breakfast, so by changing the cells of the indicated .

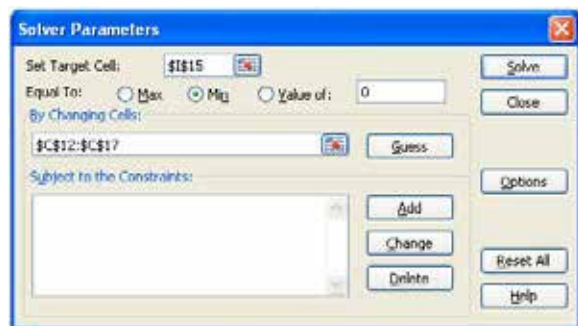


Figure no.2. Choice of what is to be changed, to be introduced in the By Changing Cells edit (by changing cell)

4. Then introduce constraints problem.

Then introduce constraints problem.

These constraints are introduced in the Subject to the Constraints (subject to restrictions) through a dialog box that opens after clicking the Add button (Add).



Figures no.3 and no. 4. represents the introduction of constraints.

After entering these restrictions, in Solver Parameters dialog box appears as shown above.

To implement the optimal solution search process is pressed Solver (solution).

Chapter 3. RESULTS AND DISCUSSIONS

Following the same method illustrated above we get:

Tabel no.4.

Option 1					
	Kcal/100 gr	P g/100gr	L g/100g	Carbohydrat	Pret te/100g
1 Buffalo cheese	219	16	22	3.20	4.012
2 Boiled egg	155	12.6	20.4	0.8	4.5
3 Salva Salame	518	24	46	1	10
4 Wheat bun	272	7.3	1.5	58.5	1.2
5 Tomato	19	3.8	0.3	3.5	4.3

Table no.4. Option 1 of breakfast with the nutritional value

Initial quantities are inserted, the objective function and constraints.

Constraints are based on recommendations regarding the proportion amounts for breakfast breakfast menu included in the RDA.

Tabel no.5.

	gr / recipe
x1	110
x2	100
x3	40
x4	70
x5	100

Table no.5. Initial quantity of the component product of option 1 for breakfast
Tabel no.6.

		RDA
Function objective - price	18,0532	
C1 (Energy)	812,5	2000
C2 (G)	49,29	240
C3 (L)	63,95	90
C4 (P)	45,71	60
C5	420	400

Table no.6. Objective function and constraints of option 1, before Solver

Tabel no. 7

	gr / recipe
x1	105
x2	100
x3	25
x4	70
x5	100

Option 2

Tabel no. 9.

	Option 2					
		Kcal/100 gr	P g/100gr	L g/100g	Carbohidrati g/10	Price lei/100gr
1	Telemea Vaca	273	19,4	20,4	0,90	1,7
2	Ou fier	155	12,6	20,4	0,8	4,5
3	Salam de Sibiu	518	24	45	1	10
4	Chifla de grau	272	7,3	1,5	58,5	1,2
5	Roşii	19	0,8	0,3	3,5	4,3

Table no.9 Option 2 of breakfast with the nutritional value

Initial quantities are inserted, the objective function and constraints. Constraints are based on recommendations regarding the proportion amounts for breakfast breakfast menu included in the RDA.

Tabel no.10.

	gr / recipe
x1	110
x2	100
x3	40
x4	70
x5	100

Table no.10. Initial quantity of the component product of option 2 for breakfast

Tabel no.11.

		RDA
Function objective	15,51	
C1 (Energy)	871,9	2000
C2 (G)	46,76	240
C3 (L)	62,19	90
C4 (P)	49,45	60
C5	420	400

Table no.11. Objective function and constraints of option 2, before Solver

Table no.7. Quantity after solver (Option 1 for breakfast)

Tabel no.8.

		DZA
Function objective - price	16,3526	
C1 (Energy)	723,85	2000
C2 (G)	49,01	240
C3 (L)	56,1	90
C4 (P)	41,31	60
C5	400	400

Table no.8. Objective function and constraints after Solver (Option 1 for breakfast)

Note the changes that occur in the quantities to obtain a breakfast menu optimized at the lowest price, but provides about the same nutritional value.

	gr / recipe
x1	100
x2	100
x3	25
x4	75
x5	100

Tabel no.12.

	gr / recipe
x1	100
x2	100
x3	25
x4	75
x5	100

Table no.12. Quantity after solver (Option 2 for breakfast)
Tabel 13.

		RDA
Function objective	13,9	
C1 (Energy)	780,5	2000
C2 (G)	49,475	240
C3 (L)	53,475	90
C4 (P)	44,275	60
C5	400	400

Tabel no.13. Objective function and constraints after Solver (Option 2 for breakfast)

Note the changes that occur when obtaining a quantitative breakfast menu optimized at the lowest price, but provides about the same nutritional value.

Tabel no.14.

		Kcal/100 gr	P g/100gr	L g/100g	Carbohidrati g/	Price lei/100gr
1	Cow cheese with parsley	27	19,4	20,4	0,90	4,7
2	Boiled egg	155	12,6	20,4	0,8	4,5
3	Sibiu Salami	518	24	45	1	10
4	Wheat bun	272	7,3	1,5	58,5	1,2
5	Tomate	19	0,8	0,3	3,5	4,3

Tabel no.14. Option 3 of breakfast with the nutritional value and chees improvement with greens (parsley).

Initial quantities are inserted, the objective function and constraints. Constraints are based on recommendations regarding the proportion amounts for breakfast breakfast menu included in the RD

Tabel no.15

	gr / recipe
x1	105
x2	100
x3	40
x4	70
x5	100

Tabel no.15. Initial quantity of the component product of option 3 for breakfast**Tabel no. 16**

		RDA
Function objectiv	18,575	
C1 (Energz)	599,95	2000
C2 (G)	46,595	240
C3 (L)	61,17	90
C4 (P)	18,575	60
C5	415	400

Tabel no.16 Objective function and constraints of option 3, before Solver**Tabel no. 17**

	gr / recipe
x1	105
x2	90
x3	20
x4	85
x5	100

Tabel no. 17. Quantity after solver (Option 3 for breakfast)

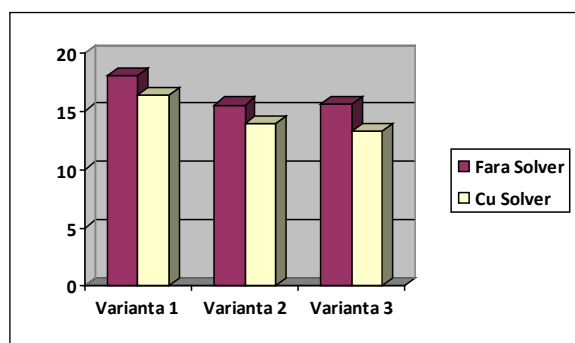
Option 3. Given the outcome of the two optimization to achieve a more balanced menu at a reduced price proposed an improved version 2 by replacing cottage cheese and cottage cheese cow cow with greens (parsley).

Tabel no. 18

		RDA
Function objective	13,155	
C1 (Energy)	779,95	2000
C2 (G)	55,09	240
C3 (L)	50,355	90
C4 (P)	13,155	60
C5	400	400

Tabel no. 18. Objective function and constraints after Solver (Option 3 for breakfast)

Note the changes that occur when obtaining a quantitative breakfast menu optimized at the lowest price, but provides about the same nutritional value.

Figure no. 5**Figur no.5. Prices variants breakfast menu before and after solving with Solver.**

We choose the optimal variant no. 3, this is largely due to replace cottage cheese and cottage cheese with herbs (parsley). Chapter 4: CONCLUSIONS

After the rest period during the night we needed a meal with healthy foods that give us energy. Breakfast is an important source of calories, fiber and minerals. Those who regularly serve breakfast have a lower tendency to consume foods rich in fat and calories throughout the day.

Breakfast is the most important meal of the day. A recent study done by the folks at ADA (American Dietetic Association) shows that breakfast provides the most health benefits

A lot of everyday foods can be "ennobled" by adding fresh parsley, fresh.

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