

Cambridge Diet

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- The Cambridge Diet is a popular weight management program developed by a team at Cambridge University (England).
- Developed in the 1970's after many years of research and was first launched as a commercial product in the US in 1980's.
- Main principle was to maintain an extreme "low-calorie" balanced diet maintaining a balanced source of protein and other nutrients.
- The diet has been used by over 1 million people with interest in losing weight.
- Is the diet still used today?

Cambridge Diet

- The Cambridge Diet was made to help accelerate weight loss, originally designed for obese patients.
- There is a need to use a combination of food since most of them contribute some desired nutrient while containing other non-desired nutrients.
- Examples: Proteins, Fats, Carbohydrates

Application

- The amount of each nutrient supplied can be written as a scalar multiple of a vector giving rise to a linear equation
- The relation between the nutrient supplied by a specific food item and total desired can be expressed by the equation:
 $a_1x_1=b_1$
- Form a matrix using the foods and nutrients provided and then augment it with the daily requirement
- Row reduce

Linear Algebra

- Nutrition
 - A team of scientist developed a formula for the Cambridge Diet
 - Millions of persons have used the diet to achieve weight loss

Amounts (g) supplied per 100 g of Ingredient

Nutrient	NonFat milk	Soy Flour	Whey	Amounts (g) Supplied by the Cambridge diet in one day
Protein	36	51	13	33
Carbohydrate	52	34	74	45
Fat	0	7	1.1	3

Example

Scalar

Vector

$$\{x_1 \text{ units of nonfat milk}\} \cdot \{\text{nutrients per unit of Nonfat milk}\} = x_1 a_1 \quad (1)$$

$$x_1 a_1 + x_2 a_2 + x_3 a_3 = b \quad (2)$$

36	51	13	33	rref	1	0	0	.277
52	34	74	45	~...~	0	1	0	.392
0	7	1.1	3		0	0	1	.233

Thus, the diet requires:

- .277 units of nonfat milk
- .392 units of soy flour
- .233 units of whey

To provide the desired amounts of protein.

Explanation

- Balancing Food Sources
- Limitations
 - Square Matrices
 - Linear Independent Equations

Difficulties

- en.wikipedia.org/wiki/The_Cambridge_Diet
- www.freedieting.com/tools/calorie_calculator.htm
- www.dietspotlight.com/the-cambridge-diet-review/
- www.cambridgedietusa.com/

References