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

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>NonFat milk</th>
<th>Soy Flour</th>
<th>Whey</th>
<th>Amounts (g) Supplied by the Cambridge diet in one day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>36</td>
<td>51</td>
<td>13</td>
<td>33</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>52</td>
<td>34</td>
<td>74</td>
<td>45</td>
</tr>
<tr>
<td>Fat</td>
<td>0</td>
<td>7</td>
<td>1.1</td>
<td>3</td>
</tr>
</tbody>
</table>
Scalar Vector
\{x_1 \text{ units of nonfat milk}\} \cdot \{\text{nutrients per unit of Nonfat milk}\} = x_1a_1 \quad (1)
\[ x_1a_1 + x_2a_2 + x_3a_3 = b \quad (2) \]

\[
\begin{bmatrix}
36 & 51 & 13 & 33 \\
52 & 34 & 74 & 45 \\
0 & 7 & 1.1 & 3 \\
\end{bmatrix}
\xrightarrow{\text{rref}}
\begin{bmatrix}
1 & 0 & 0 & 0 & .277 \\
0 & 1 & 0 & 0 & .392 \\
0 & 0 & 1 & 0 & .233 \\
\end{bmatrix}

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.
• Balancing Food Sources

• Limitations
  o Square Matrices
  o Linear Independent Equations
References

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