Khoo Teck Puat Hospital
NHG Health

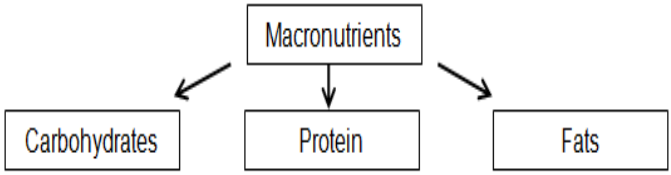
Yishun Community Hospital
NHG Health

Adding Years of Healthy Life

Department of
**Nutrition & Dietetics**

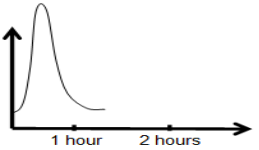
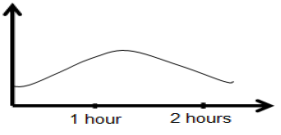
# Impact of Macronutrients on Blood Sugar Level

Our foods and drinks provide 3 main macronutrients [large nutrients that give us energy] in various amounts:




## Carbohydrates (CHO)

1. CHO are broken down into glucose (sugar) after digestion.
2. Both the amount and type of CHO you eat will affect your blood sugar level differently.
3. Eating too much CHO at one time will raise your blood sugar level.
4. Some CHO digest quickly (simple sugar) and others more slowly (complex CHO).
5. CHO is an important part of our diet as it is the main energy source for our body. CHO also provide vitamins, minerals and dietary fibre.
6. Spreading your CHO intake evenly throughout the day can help to prevent excessive changes in blood sugar levels. It is also recommended to choose complex CHO!

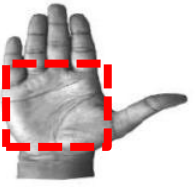
| Types of CHO | Examples | Impact on sugar level |
|---|---|---|
| Simple Carbohydrates |  Honey  Sugars  Ice Cream  Cake  Soft Drink  Fruit Juice  Chocolate  Sweets | • Quickly digested<br>• Raise blood sugar level quickly  1 hour 2 hours |
| Complex Carbohydrates |  Brown Rice  Whole-grain Pasta  Wholemeal Bread  Oats  Whole-wheat Biscuits  Corn  Potato  Lentils, Beans | • Take longer time to digest<br>• Raise blood sugar level slower  1 hour 2 hours |

## Protein

1. Protein does not convert to glucose after digestion.

2. It has a minimal impact on your after-meal sugar levels.

   This applies if you are eating a moderate amount of protein-based foods at a meal, e.g. 1 palm size of lean meat.



3. However, if you are eating a large portion of high fat and high protein meal [as a result of the meat type or cooking method], your blood sugar level will rise more slowly but possibly to a higher degree.

Example of protein foods that contain minimal or no carbohydrates:



Egg



Tofu



Fish



Prawns



Chicken (no skin)



Lean Meat

## Fat

1. Fat does not convert to glucose after digestion. However, it may indirectly affect your blood sugar level trend because a high fat meal takes longer time to digest.

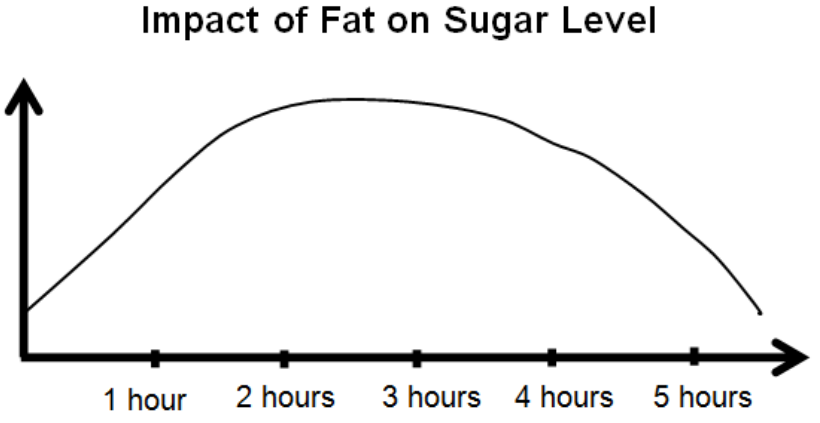
2. Fats can take 4-6 hours and sometimes even longer to be fully broken down. Hence, fats delay gastric emptying [slow down how fast food leaves your stomach] which delay the rise of blood sugar levels.

3. Excessive fat intake also increases the amount of free fatty acids in the blood which will lead to insulin resistance [when your body does not respond well to insulin].

4. An occasional fatty meal is acceptable. However, excessive fat intake can make your sugar levels difficult to control.

5. Ways of cutting down your fat consumption:

- Limit high fat foods to 2 times or less per week [e.g. fried noodles, fast-food, roti prata]
- Go for soup-based food choices
- Use less gravy
- Remove animal skin [e.g. chicken skin]




**Take note:**

• The impact of macronutrients on after-meal blood sugar will vary from person to person and situation to situation.

• Please monitor your blood sugar levels regularly to understand your individual responses to meals that you eat.

Please contact KTPH & YCH Dietitian at 6602 2420 if you have any nutrition related questions.

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