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Hunger - Fats and Favorite Foods

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April Fool!!! Well, not really, it's just another attempt to help people manage the unmanageable: their weight. We often try to lose weight without fully understanding the interacting factors and drives which determine hunger, food intake, and body weight. We gain weight when energy intake (calories) exceeds expenditure (exercise and activity), but the critical issues are: "What can make someone expend enough energy or reduce enough intake?"

Several biological mechanisms for the hunger drive are the:

- **mouth,**
- **stomach,**
- **hypothalamus**
- **duodenum.**

The mouth, stomach, and duodenum are short-term mechanisms whereas the hypothalamus is long term.

One test studying how the **mouth** affects hunger involved an operation on rats, where the esophagus was redirected out of the rat's body instead of connecting with the stomach. The results were that the rats stopped feeding after chewing and swallowed larger than normal meals, but they soon became hungry again and ate. This clearly shows that the mouth is only a short-term sensory receptor.

One major scientific experiment on how the **stomach** affects hunger, food intake and body weight was done by Cannon and Washburn (1912). Cannon had Washburn swallow a balloon so that stomach contractions could be measured. From this a correlation was found between contractions and self-reports of hunger. However, people whose stomachs have been surgically removed still get hungry. Even if you cut the nerve pathways from the stomach to the brain they get hungry. This suggests that the stomach isn't the main way the body regulates hunger and food intake.

In the body, another short-term mechanism is the **duodenum**. The duodenum releases a hormone, cholecystekinin (CCK), in response to fatty acids in the intestine. This activates sensory neurons in the vagus nerve, which activates neural mechanisms in the brain that produce the sense of satiety that brings one to stop eating. In one test, where CCK was injected into hungry rats, the rats' appetite decreased.

The **hypothalamus** is thought to be an important part in regulating hunger, food consumption and body weight. Different areas, being the lateral area and ventromedial area, are thought to be involved in different aspects of feeding behavior. The ventromedial area is thought to act as a satiety center, whereas the lateral area is thought to initiate eating behavior when food intake is required. Hetherington and Ranson (1942) did an experiment where they damaged the ventromedial nucleus of the hypothalamus.

This caused the rats to greatly over eat. Another study done by Olds (1958) shows that if you stimulate the ventromedial nucleus rather than damage it, eating actually decreases. With the lateral hypothalamus, studies show that to damage it decreases eating, where stimulating it increases eating.

Seeing a food can stimulate hunger

People can also be affected from external cues. Seeing a type of food they love can make them feel the need to consume it, as well as other food around. When people like this see food they like, their insulin level increases. The increased insulin then increases hunger and if the food is consumed during this time, the food is most likely to be stored as fat.

Anxiety can play a big part in this. If you go to a rather large social gathering, you may notice many people eat more food than normal. The anxiety caused from being around people that you may not know, as well as other anxiety causing factors in such a situation can cause one to become more responsive to external stimuli. An experiment, where Rowland and Antelman put rats under stress by pinching their tails for ten to fifteen minutes ten times a day for five days, showed that the rats gained an average of sixty- three grams. The control rats only gained an average of seventeen grams. Because of this type of external cueing, people need not only to watch their consumption, but also their eating environment.

Lose weight but not fat cells

Losing weight and controlling hunger is very complicated. When people gain weight the number of fat cells increases and the fat cells enlarge. When someone actually does something to lose the weight, he or she usually never loses all of it. This is due to the fact that the fat cells shrink, but to actually lose the fat cells is hard. The best way to lose weight is to plan what you are going to do for the long term. Fast schemes for losing weight do not work.

Regular exercise to expend energy, as well as a balanced diet to limit fatty and unneeded food intake is the best way. Stop eating little treats between meals. Don't stock up your kitchen with two-minute noodles, or other junky easy to make food. Cutting down sugar intake and things that trigger you to eat more than usual also helps.

People should lose weight, if losing weight is needed to be healthy. If it is life threatening, such as affecting and creating high blood pressure, or other problems, weight should be lost. Also a bit of weight loss to tone up for personal image wouldn't hurt, if the individual feels the need. With a good understanding of hunger, food intake, and body weight you should be able to effectively lose weight.

How to Control Hunger

If you eat a balanced meal, you should not be hungry for the next four to six hours. This is principally because you will maintain your blood sugar levels for that period of time. If you get hungry before 4-6 hours, generally your blood sugar has dropped either because you produced too much insulin by eating too many carbohydrates in your last meal or because you did not eat enough carbohydrates with your last meal. Here's how to distinguish between the two:

1. If you have produced too much insulin, your blood sugar will be driven down and your mental alertness drops. You get a loopy feeling.
2. If your insulin levels are too low, there is not enough insulin crossing the blood-brain barrier to interact with the hypothalamus to prevent the synthesis of neuropeptide Y, probably the most potent stimulator of appetite. Even though your brain is getting enough sugar, as evidenced by your mental alertness, you have a growing hunger due to the increase in neuropeptide Y levels in the brain.

If you feel hungry and "loopy" you have eaten too many carbohydrates relative to the amount of protein. If you are hungry but maintain good mental acuity, you have pushed insulin levels too low and you need to increase the carbohydrates in your meals, relative to the amount of protein.

To control your hunger:

1. Drink at least 64 ounces of water per day.
2. Eat more fruits and vegetables, and less pasta, breads, grains and starches during the day. These latter foods increase your insulin levels and will cause you to be hungry before the next meal.
3. Eat more frequent meals with fewer calories.
4. Eat small amounts of low-fat protein at every meal and snack.
5. Have some "good fats," monosaturated fats, such as almonds, walnuts, olive oil, with each meal and snack.

With this plan, you will stop gaining excess body fat.

To stop gaining weight:

1. Determine how much protein you require per day and consume that amount. At SETMA, we calculate your daily protein need every time you come to the clinic. Ask for it and use that information to guide your eating.
2. Use the eyeball method to control your ratio of protein to carbohydrate at every meal. Your plate should be organized into thirds – one third protein (about the amount which will fit into the palm of your hand); two thirds fruits and vegetables.
3. Add some extra monosaturated fat to every meal.
4. Drink 8 ounces of water thirty minutes before a meal.

Following this plan will result in your starting to lose excess body fat.

When to eat to control hunger and weight gain

1. Make sure most of your carbohydrates come from fruits and vegetables, and use grains, starches, pasta and breads as condiments. Try to keep grains, starches, pasta and bread to no more than 25% of the total carbohydrates consumed at a meal.
2. Never let more than five hours go by without eating a meal or snack.
3. Always eat breakfast within one hour of rising.
4. Always have a small snack before you go to bed.
5. Always have a small snack thirty minutes before you exercise.

Following this plan, will make it possible for you to achieve your ideal body weight and to attain excellent health.

But, what do I do about the fact that I eat when I am not hungry? That's another issue for future discussion. Remember, it is your life and it is your health.