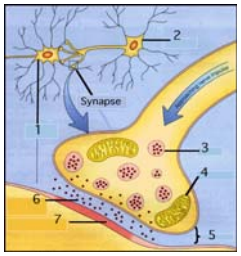
Food, Mood, and Neurotransmitters 

The Theory

Just how does a food affect neurotransmitters? According to Dr. Richard Wurtman at MIT, who is involved in numerous studies on nutrition and the brain, the nutrients in foods are precursors to neurotransmitters, and depending on the amount of precursors present in the food you eat, the more or less of a certain neurotransmitter is produced. Although this process may seem fairly straightforward, it is complicated by the fact that foods most often are made up of more than one nutrient, and how those different nutrients interact will also impact the production and release of neurotransmitters.

The Practice

Despite the complexity, there are certain established bits of knowledge of how food affects your mood that you can put into practice.

 **Boost your alertness with protein.** Protein foods are broken down into their amino acid building blocks during digestion. One amino acid, called tyrosine, will increase the production of dopamine, nor epinephrine and epinephrine. These neurotransmitters are known for their ability to increase levels of alertness and energy. No one eats pure tyrosine, but eating foods high in protein will give you a slight mental boost. High protein foods include fish, poultry, meat, and eggs. If you can't eat those, try high protein foods that also contain significant amount of carbohydrates, such as legumes, cheese, milk, or tofu.

 **For relaxation and anti-stress, eat carbohydrates.** Eating carbohydrates will trigger the release of insulin into the blood stream. Insulin goes about clearing all the amino acids out of the blood, with the exception of tryptophan. Tryptophan is an amino acid that normally gets crowded out by other amino acids

in its attempt to cross the blood brain barrier, but when its competitors are out of the way, it enters the brain. Once in the brain, the tryptophan is converted to serotonin. Serotonin is a neurotransmitter that has the effect of reducing pain, decreasing appetite, and producing a sense of calm, and in too large a quantity, inducing sleep. Research has shown that dieters tend to become depressed about two weeks into a diet, about the time their serotonin levels have dropped due to decreased carbohydrate intake.

For the most beneficial effect of either carbohydrate or protein, eat them separately. For example, the energy boosting effect of protein will be offset if you start out a lunch of fish (pure protein) with a roll (mostly carbohydrate). Make the protein the first food that you eat, and then, go lightly on the carbohydrate if it is mental alertness you are after.

 **Caffeine can be an effective anti-depressant**
Despite its bad rap, caffeine can do some good. For mild cases of depression, which do not need medical attention, a little caffeine can be an effective anti-depressant. It has the added benefit of not needing to increase the dosage daily to get the same effect. Long-term epidemiological evidence more than supports the safety of a cup or two of coffee a day. More than that, however, can begin to have counterproductive effects in some people.

 **Likewise, folic acid is an important counter to depression**. Folic acid deficiencies have been linked to depression in clinical studies. Folic acid deficiency causes serotonin levels in the brain to decrease. Psychiatric patients with depression have much higher rates of folic acid deficiency than the general public. As little as 200 micrograms was enough to relieve the depression -- that amount is easily obtained in a cup of cooked spinach or a glass of orange juice.

 **Lack of selenium can cause bad moods**. Individuals suffering from a lack of selenium have been shown to be more anxious, irritable, hostile, and depressed than their non-lacking counterparts. Correcting deficiencies normalizes mood, but getting more does not elevate mood further. It is speculated that selenium may have some unknown neural function, but as of yet, its mode of action is unknown. Be sure to get your daily dose by eating a Brazil nut, or tuna sandwich, sunflower seeds, whole grain cereals, or swordfish.

 **Put eggs back in your diet to improve memory and concentration**. One nutrient that many of us are apt to be low on, in our fervor to avoid high-cholesterol foods, is choline. Choline is a B complex vitamin that is concentrated in high cholesterol foods like eggs and liver. A lack of choline can cause impairment of memory and concentration. Choline is a precursor to the brain neurotransmitter, acetylcholine. Acetylcholine is linked to memory. People given drugs that block acetylcholine flunk memory tests. Low levels of acetylcholine have been linked to Alzheimer's disease and poor memory. What a good excuse to put eggs back on your diet plan!

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