TO YOUR HEALTH Session 3 – PROTEINS

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Some common disorders associated with proteins:

Genetic, dna related disorders – these are nearly always related to some protein abnormalities with blood, or tissues. (e.g. hemophilia, etc)

Kidney disease – the kidneys are not able to filter the blood properly resulting in waste products and fluid increasing to dangerous levels. Continuous excessive protein can potentially exhaust the kidneys.

Endocrine disorders – hormones are out of balance.

Amyloid diseases - insoluble fibrous protein aggregations sharing specific structural traits create amyloid deposits. (Alzheimers, Parkinsons, Huntingtons, etc)

Allergies and food intolerances – most allergies are associated with proteins and not fats or carbohydrates.

What is Protein:

- Compounds of carbon, hydrogen, oxygen and nitrogen. High quantities are found in meats, dairy, and some vegetables and grains.
- Protein molecules must be digested and broken down into smaller components called **amino acids** (about 20 types) which the body can then use. The body uses **enzymes** to break protein down**.**
- There are **8 amino acids that are essential** (9 for children) to human health and must be consumed in our daily food intake**.**
- Protein is used for growth and repair of the body. There are over 50,000 life support components made from amino acids. *Within one year about 98% of body protein (tissue) is replaced – therefore your body is made up of what you ate over the last year.*
- **Excess protein can be used as energy, but is not stored** (when it cannot be used for energy, it puts a load on the kidney for excretion).

If you want to know your personal protein needs, take your weight in pounds and divide by 2.2 to get your weight in kilograms, then multiply this number by 0.8. This is the amount of protein you need every day if you are sedentary. If you exercise, you can multiply your weight in kilograms by a range of 1.2 to 1.6 depending on how active you are (1.6 represents heavy, daily activity).

Amino acids are divided into two types, *essential (8-9)*-which cannot be made in the body, and *non essential (12-13)*-can be produced in the body from the essential ones.

ESSENTIAL AMMINO ACID	SOME USES IN THE BODY
ISOLEUCINE	proper hemoglobin formation, muscle functions, deficiency in mentally ill, used almost exclusively in protein and enzyme construction.
(HISTADINE) ***- essential for children***	used in red and white blood cells, removes metals, maintains myalin sheaths (nerves), affects digestion
LEUCINE	lowers blood sugar, helps skin & bone healing, corrects congested liver or damaged kidneys, almost exclusively in protein and enzyme construction.
LYSINE	alleviates fatigue, nausea, dizziness, tissue repair, anti-viral, corrects hypoglycemia, helps in absorption of calcium and formation of collagen.
METHIONINE	member of liptropic team (choline & inositol) to produce lecithin, is an antioxidant, neutralizes toxins, deactivates free radicals, removes metals.
PHENYLALANINE	improves learning and memory, inhibits appetite, has been known to increase blood pressure in some people, anti-pain, anti-depressant.
TRYPTOPHAN	induces sleep, lifts depression and anxiety, can reduce headaches, counteracts nicotine, reduces blood pressure & blood fats, raises histamine.
VALINE	works with leucine and isoleucine for oxidations of glucose, strengthens muscle and supports mental and emotional well being
THREONINE	prevents fatty build-up in the liver, constituent of collagen, elastin and enamel protein (deficiency results in irritability)

Protein digestion (stress here is defined as the amount of work the body does to make amino acids)

Low stress examples: sprouts, coconut milk, cottage cheese, eggs, deep ocean fish, soaked nuts, fermented soy, chicken, yogurt, etc

Medium stress: Avocado, turkey, hard cheeses

High stress: Beef, pork, raw nuts, peanuts, cow's milk

Protein and Vegetarians – vegetarians use mostly vegetable and grain sources for their diet

- It is important to combine various foods to consume complete protein (e.g. rice, corn and beans)
- Vegetarians are **susceptible B12 and folic acid deficiency** because B12 is found mainly in animal protein. An adequate intake of folic acid can mask this deficiency. (some symptoms of deficiency are: gastrointestinal weakness, sore tongue, yellow skin and tingling extremities, unusual fatigue, loss of appetite, nausea, loss of menstruation and neurological symptoms)

Protein – Sleep and Body Repair

Tissue repair and amino acid activity is highest during the REM (Rapid Eye Movement) phase of our sleep cycles. We sleep in 90 minute cycles with the middle 30 minutes of deep sleep or(delta or "slow wave activity". Taking substances (e.g. tricyclic antidepressants, sleeping pills, etc) that interfere with REM can reduce the body's ability to rejuvenate. Also, if we force ourselves awake in the middle of a cycle, it can slightly impair our cognitive abilities for the whole day.

During times of illness or injury, it is especially important to consume slightly higher levels of quality low stress proteins, and rest adequately.

Excess Protein

- There is no value in eating excess protein, as much of the excess is eliminated in urine and feces. There is no efficient way for the body to keep protein storage. The excess water required to wash out protein by products in a high protein diet can leave a person dehydrated and constipated.
- Very high levels of dietary protein have also been correlated with increased urinary calcium excretion. The loss of calcium through urine could potentially be harmful for bone turnover, with the added risk of osteoporosis and kidney stones
- Protein requires vitamin B6 in order to be metabolized and ultimately utilized in the body. Very high levels of dietary protein increase the requirement for this B vitamin.

Protein and Food Allergies

- **There are eight types of foods that are accountable for 90% of all food-allergic reactions** Some of these foods can cause anaphylaxis. These are called *allergenic foods*: Peanuts, shellfish, milk, tree nuts (walnuts, pecans, etc), fish, soy, eggs, wheat
- Symptoms of food allergies are hives, vomiting, diarrhea, abdominal cramping, difficulty breathing
- Food intolerances are not food allergies. Supplements can help to deal with food intolerances.

Altered Proteins

- Hydrolyzed Proteins - The most common food additive that is an altered protein is hydrolyzed protein, also known as MSG (Monosodium Glutamate), calcium caseinate, sodium caseinate, textured protein, autolyzed yeast, and other similar names, including 'natural flavorings' (free glutamate joins with free sodium to make MSG). It is added to foods to enhance flavor. Over 90 different reactions have been reported by these substances.
- Aspartame – a non-calorie artificial sweetener – aspartic acid, phenylalanine with methanol. Many reactions to this substance have been reported e.g. headaches, memory loss, anxiety, stomach ache.

Good Book on Food compositions: Nutrition Almanac by Lavon J. Dunne ISBN-13: 9780071373388

For Muscle Building: http://www.thinkmuscle.com/articles/mcdonald/protein-01.htm

Amazing website for scientific information: http://www.johnkyrk.com

For calculating essential amino acids (also a vegan site): (remember 1 kg = 2.2 lbs for conversion)
http://www.vegtalk.org/vegan-nutrients/essential-amino-acids-vegan-diet-t2558.html

SUMMARY - SIMPLE PRINCIPLES REGARDING PROTEINS:

- **Eat proteins during the day and not late at night. Include protein in your breakfast.**
- **Eat appropriate amounts of complete, high quality protein foods - those that are low in carbohydrates and fats, especially saturated fats.**
- **Get plenty of good rest. Sleep in full cycles.**
- **Exercise regularly**
- **Avoid altered proteins or proteins that you are intolerant or allergic to.**