**Slide#2**

-We classify nutrients into Macronutrients and Micronutrients according to the needs of our bodies to those nutrients , so ; proteins ,fats, carbohydrates are macronutrients because we need them in large amounts ,yet vitamins are micronutrients because we need them in small amounts.

-remember that Estimated Energy Requirement varies significantly from individual to other according to the level of their activity, so it’s not easy to be determined for each person ;however we can do some average estimations : Sedentary adults , Moderately active adults and Very active adults.

**Slide#3#4**

-carbohydrates and proteins provide us with 4 Kilocalories/gram , fat 9 Kcal/g , alcohol 7 kcal/g.

-the calories –that come from food- are expended in the body for :

1.Basal metabolic rate (BMR or RMR)

2.Thermic effect of food

3.Physical activity (the most variable between people and generally in average it contributes for 30% of the total energy expenditure)

**Slide#5**

-every component of macromolecules is necessary and essential.

-AMDR is a measurement for the amount you need from a specific macronutrient to run your basic activities ,makes you healthy ;and at the same time protect you from there adverse effectsand the risk of chronic diseases.

-if we get very low amounts of fat, its good for health from the view that there will be no problems in the body due to fat; however there’s no fat enough to run our basic activity.

-we can live without carbohydrates because of the process of gluconeogenesis , but we will be at the risk of high level of ketone bodies.

**Slide#6**

-endogenous biosynthesis of cholesterol has the main effect on the blood cholesterol , not the dietary cholesterol.

-so; the patients with high levels of blood cholesterol… they are better treated by drugs (more effective) than dietary changes.

-CDH: chronic heart disease.

**Slide#7**

-fatty acids : saturated , mono-unsaturated ,poly-unsaturated

-saturated fatty acids are the worst because they increase the blood cholesterol , however when the carbon chain length increases (18,20,22 carbons) in these saturated fatty acids > the bad side effect decreases (less increase in blood cholesterol, less chance to CHD)

**Slide#8 #9 #10 #11**

-omega 3 fatty acids are better than omega 6 fatty acids (both are good)

**Slide#12**

-Trans fatty acids behave like the saturated fatty acids because they have a straight chain conformation , but they are worse than the saturated because they may form free radicals (due to the double bond)

-Cis fatty acids has a kink in the position of the double bond, increasing the solubility of cell membrane.

**Slide#13**

-phenolic compounds found in grapes (and alcoholic drinks) are good antioxidants.

**Slide#14**

-obesity increased although the total caloric intake is almost constant (slightly increased), this’s related to the lifestyle and the nature of the food intake nowadays , the most dietary component related to this increase of obesity is the increase carbohydrates.

**Slide#15 #16**

-chance of having GI cancers decreases with the increase in fiber-intake.

-fibers intake lowers LDL , how? bile acids are excreted whatever the food contents in the intestine, to help in absorption of fat content if present , but if the meal had a high content of fibers , most of the bile acid that was excreted will not be used and will not be reabsorbed; so the most of the fat content will not be absorbed.

**Slide#17**

-carbohydrates have no direct relationship with any disease , except the dental caries; there’s a direct cause-effect relationship between carbohydrates intake and the dental caries.

**Slide#18 19**

-Quality of a proteins : is its ability to provide essential amino acids to meet the needs of the human being.

**Slide#20**

-positive nitrogen balance : high Nitrogen content in the body more than the needs; normally at childhood and pregnancy.

-negative nitrogen balance : low Nitrogen content in the body less than the needs.

**Slide#21**

-when protein intake decreases in significant manner ; no amino acids for protein synthesis > body protein synthesis decreases > plasma proteins decrease > vascular oncotic pressure decrease > edema occurs > (kwashiorkor)

**Good luck ☺**

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