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# MISCONCEPTIONS OF DIETARY PROTEIN

----- David L. Watts, Ph.D., Director of Research -----

## INTRODUCTION

Research and experience in recognizing and designing dietary and supplement suggestions for metabolic types through tissue mineral analysis (TMA) of human hair has led us to the conclusion that increased animal protein is highly favorable for the slow metabolic types. There are many misconceptions concerning high protein intake. Animal protein is generally shunned by the majority of individuals, physicians, and nutritionists in the United States. This has led to the overlooking of its obvious benefits.

### Cholesterol

Cholesterol (CHOL) from animal fats and eggs is considered to be the major contributor to atherosclerosis and cardiovascular heart disease (CHD). Many studies have shown a correlation between elevated CHOL and CHD risk, most notably the Framingham Study. In fact these studies have proven that a person with hypercholesterolemia has a much higher risk for CHD. This is undeniable. However, only 50% of the many patients studied who suffer from CHD have high serum CHOL. The other 50% had normal to low levels. Studies at the Mayo Clinic concluded that serum CHOL, high or low, was not associated with severity of arteriosclerosis. Studies have also shown that drug therapy aimed at lowering cholesterol levels, (even though they did by up to 9.9%), had no effect on mortality when compared to a placebo group. There have been, and are still present, some primitive cultures who consume exceptionally high amounts of animal protein and CHOL, who do not suffer from CHD. We can therefore conclude that CHOL intake, nor elevated serum CHOL is the initiating factor in arteriosclerosis. Brown, et. al. have concluded that only in rare genetic conditions are high serum levels of CHOL alone sufficient to initiate and sustain an atherosclerotic process. It has been proposed (Leaf, et al.) that a number of events must first occur to prepare the vessel wall before CHOL can be deposited to form atheromatous lesions, and that the deposition of CHOL in the vessel walls is almost a secondary event. Leaf, further proposes that there are multiple sites at which the atherosclerotic process can be inhibited before there is any role for CHOL.

A historical perspective by Leaf compared the dietary habits and incidence of atherosclerosis of primitive man to modern man. Chronic degenerative disease including CHD were largely unknown among "hunter- gatherer" cultures, even though the diet was estimated to contain at least 35% animal protein and 65% vegetables. The major difference between primitive and modern societies appear to be the increased intake of saturated fats due to increased dietary dependency upon grain as a staple, for humans as well as livestock, hydrogenation of vegetable oils, and added risk factors of today's culture, such as stress, pollution, etc. We can see that even though animal protein consumption is lower today, (frequently less than 20% of the average American diet), it has not made a major contribution to the reduction of CHD.

**Protein helps lower serum cholesterol**

Recently a study reported the beneficial effects of high protein intake from animal sources on reducing elevated cholesterol levels. The patient's diet consisted almost exclusively of beef rib steaks occasionally substituted by other types of meats or poultry. Fruits and vegetables were limited. As a result, cholesterol levels were reduced from 263 to 189 mg/dl, triglycerides decreased from 113 to 74 mg/dl, and high-density lipoproteins (HDL) increased. The author, Dr. H. L. Newbold, theorizes that some individuals have an inherited biochemistry unsuited to metabolizing fruits and vegetables. Such a diet would result in defective metabolizing of cholesterol from animal fats.

**Metabolic individuality**

Although at T.E.I. high amounts of protein from animal sources is suggested for some individuals, it should be kept in mind that our dietary recommendations are based upon metabolic types (individuality) and are not generalized. Animal protein has the highest specific dynamic activity (SDA) of any protein. This means that it enhances or increases the metabolic rate. We can therefore see the benefits of increased protein intake for individuals with a slow metabolic rate. Protein enhances the effects of the adrenal and thyroid glands, thus resulting in an improved metabolic rate and energy level. Stimulation of the adrenal and thyroid glands frequently results in lowering cholesterol levels even with high protein intake. It should be mentioned that the patient's metabolism is also supported to improve his ability to utilize protein. Without this nutritional metabolic support, a high protein diet would be difficult for many individuals with a markedly slow metabolic rate to tolerate. This eating habit also helps to control Type I hypoglycemia often found in the slow metabolizer.

Again this type of dietary recommendation should not be generalized to include everyone with high cholesterol and triglyceride levels. As the old saying goes, "One man's food is another man's poison." The fast metabolizer should be counseled to reduce high protein intake as it could aggravate Type II hypoglycemia and further increase the metabolic rate, thus compounding his problem.

**Misconceptions concerning protein**

As mentioned earlier, there is much misinformation and misunderstanding concerning dietary protein intake. A recent article, brought to my attention by the many calls we have received concerning its contents, illustrates this point. Therefore, I will address some of the major points of the article in order to clear up the confusion it has produced.

The article, which was not referenced, was titled "Protein". Generally, I agree with the content, however, erroneous conclusions have been drawn from many of the statements.

The most frequently asked question by those who have read the article pertains to protein requirements. Specific statements include, "...mothers milk is 1.4% protein. Remember that number, 1.4%." "Cabbage, broccoli, asparagus... most all of the vegetables... contain at least 1.5% protein." These statements are being construed as implying that protein intake should only make up 1.5% of the total caloric intake, thus leading to a false impression. To clarify, these percentages are correct when the total weight of the foods is being considered. As an example, the statement that human milk contains 1.4% protein is correct if the total weight of the foods is being considered, but the water content of milk is over 87%. (Best and Taylor) If the protein content of milk is considered on a dry weight basis and excluding the ash, the percentage of protein relative to the other nutritive substances is closer to 20%, which is more in line with human protein requirements. The composition of milk varies widely among nursing mothers by as much as 100%. (Foment) Milk production by the mother is influenced by her protein intake: the lower her protein consumption, the lower her milk production. A protein intake of only 1.5% by a lactating mother would lead to serious consequences for the infant. The protein requirements of infants change according to illness, diarrhea, vomiting, size, and age. Newborns are unique in their metabolism, having an enhanced ability to utilize protein. (Fomon)

Plus, colostrum has two to three times the protein content of breast milk and is excreted for about ten days from the beginning of lactation. (Fomon).

***Stimulation of the adrenal and thyroid glands frequently results in lowering cholesterol levels even with high protein intake.***

Protein accounts for only a small percentage of weight gain by the infant. As stated by Kon, "It stands to reason that milk which only for a limited time and with certain reservations is the ideal food for the young of any species..." (Kon) Milk therefore should only be used for a short time as the only nutrient source for infants. Other foods should be added as soon as reasonably possible. Otherwise nutritional deficiencies can develop. The most common is milk anemia. (Underwood, Prasad) The protein content of ruminate milk is much higher than human breast milk. The percentage of protein in raw cow's milk (dry basis, without water, ash and minerals), approaches 50%. This is to be expected since calves double their birth weight in half the time as human infants: 50 days for the calf compared to over 100 days for the infant.

**Vegetable protein content**

Regarding the protein content of vegetables such as broccoli, we find in 100 grams (minus non-digestable fiber, water and minerals), the carbohydrate content equals 6 grams and the protein content is 4 grams. The percentage of protein is then over 40% in relation to the carbohydrate content. (USDA) Cabbage contains 20-25% protein; however, using total weights the percentage of protein would in fact be only 1.5%

Another quote in that same article claims, "There is twice as much protein in kidney beans as in pork." However, one pound of kidney beans contains 28 grams of protein, and one pound of pork chops contains 61 grams of protein. Bacon contains 40 grams per pound, and Canadian bacon 90 grams of protein per pound. (USDA) The type of pork was not mentioned nor preparation methods.

**Vitamin B12**

"The human body does not need animal protein to grow and to function." This statement in that article overlooks the vitamin B12 deficiency commonly found in individuals consuming a total vegetarian diet. (Williams, et al.) Animal protein is the chief source of this vitamin. Vitamin B12 is totally absent from grains, fruits, and vegetables. (Wilson, et al.)

**Other nutritional deficiencies and total vegetarian diets**

Many vegetables inhibit mineral absorption and can lead to other deficiencies. (Nutr. Rev.) Our studies have shown that vegetarians are usually deficient in iron, manganese, sodium, potassium, zinc, vitamin A, B6, and niacin. These observations have been noted by others. (Ismail-Beigi, et al.; Cullubine, et al.; Anderson, et al.; Gibson, et al.; King, et al.)

**Protein requirement of animals**

The article also contained the following statement, "look at the buffalo. It achieves great size and weight eating only grass...not even good quality grain", hopefully is not meant to compare animal nutrition to humans, but some people have construed it as such. A major difference is found when comparing the digestive abilities of ruminants and humans. Grazing animals have the capability to readily make simple amino acids from others that may be in excess. The bacteria found in the ruminate digestive system have the capability of digesting cellulose and other complex carbohydrates and to make amino acids from non-protein nitrogenous compounds. Therefore, cattle, horses and buffalo can make complete proteins from food sources that humans and other single-stomached animals could not even digest. Non-protein nitrogen is a major source of protein for grazing animals and is found extensively in seeds, plants, and pasture crops. (Maynard) Ruminants do not eat grass only, but also roots, clover, seeds and grains. Their diet also will vary with seasons. Grasses will contain up to 20% protein. Clover and alfalfa has over 25% protein. The content of young grass and plants is, of course, much higher in protein than mature plants. (Morrison) This is why buffalo and cattle are seldom seen grazing in tall grasses. Mature grass may contain only 3% protein, and the animal could not subsist on such a low protein intake. If forced to do so, horses often resort to eating dead birds, rodents, and other high protein sources. (Cunha) Also, since the buffalo may eat over 100 pounds of grass daily, we can see that they have a rather large requirement for protein and actually are eating several pounds of protein daily.

**Acidity-Alkalinity**

Regarding pH, the article suggests that all tissues, intracellular and extracellular, except for the stomach should be slightly alkaline. This is also misleading. The pH of all tissues combined averages out to be slightly alkaline. However, it must be kept in mind that this is an average. The intracellular pH ranges from 4.15 to 8.0. Cells with a high metabolic activity normally tend to be acidic due to increased CO2 production, while cells with a lower metabolic rate tend to be alkaline. As an example, cells of the prostate have a pH of about 4.5, and osteoblastic cells have a pH of about 8.5. (White) As the article points out, "We live or die at the cellular level." Therefore, we should be careful in affecting pH since too much acidity or over-alkalinity will inhibit enzymatic function and lead to metabolic disturbances. Blood and urine pH is only a reflection of cellular metabolic events.

The comment "cancer cells proliferate in an acid media", is true, but implies that acidity causes malignant cells to develop. However, malignant cells do not necessarily develop as a result of over-acidity; on the contrary, the opposite may be the case. As a cell becomes malignant, complete metabolic activity is reduced. This of course results in contributing to an alkaline intracellular environment. Glycolytic or anaerobic activity predominates, the end product being pyruvates that cannot be further metabolized into acetyl- CoA. (Frank; Szent-Gyorgyi; Watts) Pyruvates are then dehydrogenated into lactic acid, which is acidic. Lactic acid will then build up and eventually escape the confines of the cell and spill into the extracellular fluids. The accompanying acidity is not the cause of malignancy, but rather the result.

**Protein as a buffer**

Also regarding pH, protein is the major buffer system of the body. Ammonia aids is the neutralization of acids, and by so doing spares or conserves sodium. When acid such as acetoacetic is produced, lowering blood pH, it is buffered by sodium bicarbonate (Na + HCO3). This results in carbonic acid (H2CO3) production, which is excreted in the lungs. Sodium bicarbonate is then re-absorbed by the kidneys if adequate ammonia is present. Urea acts as a diuretic. About 50% is re-absorbed. (Kleiner and Orten) It should be emphasized that this is a normal process, which occurs regardless of how much protein is in the diet, and becomes disturbed only in pathological conditions, such as renal failure, diabetes, malignancies, etc.

**Sodium**

The last statement in the article that I would like to comment on pertains to sodium chloride. "Table salt is bonded by an ionic, strong bond and the body cannot break the NaCl ionic bond. The vital sodium needed is found covalently bonded to protein and organic acids in fruits and vegetables." This statement tends to leave one with the impression that the only utilizable sodium is found in the plant kingdom. If this were the case, wild herbivores would not walk for days to find natural salt deposits (sodium chloride) in order to satisfy their sodium needs. Nor would farmers and ranchers have to provide salt licks (sodium chloride) for their cattle. The bond of sodium chloride is broken easily with the addition of water. (Young, et al.) Since all mammals have a rather large water content, utilization of sodium from sodium chloride does not present any great difficulty.

I want to emphasize that no disrespect is intended toward the author of this article. This is merely an attempt to clarify the many questions brought up by many of the statements within the article. Excess protein and acidosis can interfere with normal cellular function and therefore, contribute to health impairment. However, alkalosis and a lack of protein presents as many problems, which should also be considered. To sum up, protein and carbohydrate requirements should be assessed according to the individual as well as his health status. From our research at T.E.I., we have estimated that excess protein intake can adversely affect approximately 20% of the population, whereas, increased protein intake and reduced fat consumption should be considered for about 80% of the population. Of course protein restrictions should be applied in certain disease conditions, particularly those involving renal failure.