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LOSE WEIGHT - REVERSE DISEASE - LIVE LONGER

Athletes and Plant Based Diets



*The following was a letter
to Richard H. Strauss, M.D.,
the Editor-in-Chief of the
Physician and Sports Medicine
on October 9, 1992.*

To the Editor:

As a family physician and former athlete who competed at the world level (3rd place World Pairs Skating Championships) while following a strict vegetarian diet, I would like to comment on three nutritional myths promulgated in the August article *Vegetarian Vitality* by Susan Klein, Ph.D., R.D.

I agree with the main point of the article that a vegetarian diet is healthful and appropriate for all people including athletes. However, the core of the article was composed of recommendations that are technically incorrect.

Myth #1 - "Plant protein sources do not contain the array of amino acids, or building blocks of protein. To balance your daily protein needs, you should combine different types of plant foods...and create complete proteins."

It was explained and diagramed in tabular format that extra time and care is needed to plan meals that contain sufficient balanced amounts of all essential amino acids.

The mistaken belief that all essential amino acids must be present at the same time (at each meal) to be absorbed and utilized by the body is an outdated notion that has never been scientifically validated. It dates way back to 1914 when the first nutritional studies were done by observing the protein requirements of laboratory rats.^[i] They determined the protein needs of growing baby rats (which grow at 20 times the rates of human infants) and extrapolated these values to humans.

It wasn't until the 1950's that human protein requirement studies were conducted. These human studies clearly demonstrated that adults require 20-35 grams of protein per day.^[ii] Today, the average American consumes 100-120 grams of protein per day, mostly in the form of animal products. People who eat only a starch-based (strict vegetarian, or vegan) diet have been found to consume 60-80 grams of protein per day, well above the minimum "requirement."^[iii]

By 1957, experiments showed 50 to 100 gms. of endogenous amino acids are transferred into the digestive tract of a human adult every day. Of this, not more than 10 to 15 gm. is lost in the stool. These digestive secretions and mucosal cells that are constantly sloughed are recycled, making the tidal blood flow remarkably complete after meals of supposedly "incomplete proteins."^{[iv],[v]}

This homeostatic mechanism serves to even out temporary irregularities in the dietary supply of amino acids and to prevent gross changes in the amino acid patterns of portal blood. It should be noted that this pattern in the extracellular fluids is unbalanced by the administration of single amino acids which represents a hazard in those attempting to complement their diets with amino acid food supplements.^[vi]

This mixing of endogenous protein is the body's way of regulating the relative concentrations of the

amino acids available for absorption. Thus the body is perfectly capable of taking incomplete proteins and making them complete by a recycling mechanism of mixing endogenous and dietary proteins.[\[vii\]](#) All vegetables and grains contain all eight of the essential amino acids (as well as the twelve other non-essential ones).[\[viii\]](#) While some vegetables have higher or lower proportions of certain amino acids than others, when eaten in amounts that satisfy one's caloric needs a sufficient amount of all essential amino acids is provided.

Myth #2 - "Calcium needs are higher for people on strict vegetarian diets," i.e. without dairy products it may be difficult to meet daily calcium needs.

Theoretically, insufficient calcium intake could cause a negative calcium balance. However, cross-sectional studies on bone loss in different countries imply otherwise. Countries whose population have extremely high calcium intakes have the highest rates of osteoporosis in the world and countries with low calcium intake often have low rates of osteoporosis.[\[ix\]](#) Excessive calcium excretion is implicated by these epidemiological studies as the primary culprit.

Several dietary and lifestyle factors contribute to excessive urinary calcium loss. Over-consumption of protein is one significant factor. Studies comparing omnivorous and vegetarian women with the same calcium intake showed significantly denser bones among the vegetarian group.[\[x\]](#),[\[xi\]](#)

High protein intake induces bone dissolution by acidifying the blood, requiring drain of our calcium reserves needed to supply basic mineral salts. The acidity produced by the breakdown of protein also decreases the kidney's ability to reabsorb or reclaim calcium lost in the urine. Studies show that people with a high protein intake develop a negative calcium balance, regardless of how much calcium is consumed.[\[xii\]](#),[\[xiii\]](#),[\[xiv\]](#)

Vegetarian diets, even without milk products, are more likely to result in a positive calcium balance than a meat based diet.[\[xv\]](#) Though it is true that

green vegetables are a rich source of calcium, there need not be a special emphasis placed on a vegetarian meeting calcium needs through special planning or supplementation. All natural foods contain calcium, even an orange contains 54 mg. However, as explained above, strict vegetarians (dairyless) require less calcium to remain in a positive balance. Indeed, the take home message here is that a person eating a diet rich in animal proteins should be concerned that they may have a negative calcium balance! Switching to a plant-centered diet could be recommended to patients to protect against negative calcium balance and resultant osteoporosis.

Myth #3 - "The iron from vegetables is not easily absorbed...Therefore, non-meat eaters, especially menstruating women and all active people must pay special attention to their dietary iron needs."

This is a common concern among people who choose to adopt a plant-based diet, especially for those whose former meat- and dairy-centered diet contributed to their chronic health problems.

Fortunately, there is ample epidemiological and clinical evidence that people who eat a completely plant-based diet easily consume appropriate amounts of iron, and that true dietary-induced, iron deficiency anemia is virtually unseen in individuals who consume this type of diet.[\[xvi\]](#) In the Cornell-China Diet Cancer Study, the largest and most comprehensive of these, the use of multiple criterion of low transferrin saturation, low ferritin, and low hemoglobin, shown no iron deficiency in the vegetarian populations. [\[xvii\]](#)

One factor accounting for this finding is the lower estrogen levels in those on low fats diets. Lower estrogen levels not only decrease a women's risk of breast cancer,[\[xviii\]](#) but also causes less endometrial stimulation and less menstrual bleeding with each period.[\[xix\]](#)

Sincerely,

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WARNING:

The Information in these articles are not intended to replace medical advice or treatment. Questions about symptoms, specific dietary needs and medications, general or specific, should be discussed with your physician. The information in this article is for informational purposes only, and is not medical advice or a substitute for a physician's consultation and/or examination.

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