

Adverse Effects of High Protein Diet {Above the Recommended Dietary Allowance} and Concept of Diet According to Ayurveda

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Abstract: While high-protein consumption-above the current recommended dietary allowance for adults (RDA: 0.8 g protein/kg body weight/day)-is increasing in popularity, there is a lack of data on its potential adverse effects. **Objective:** To determine the potential disease risks due to high protein/high meat intake obtained from diet and/or nutritional supplements in humans. **Design:** Review of articles and research papers by Madeline, Google scholars and electronic database. Studies were identified by citations in retrieved papers. Experimental human studies and reviews were identified. The adverse effects associated with long-term high protein/high meat intake in humans were (a) disorders of bone and calcium homeostasis, (b) disorders of renal function, (c) increased cancer risk, (d) disorders of liver function, and (e) precipitated progression of coronary artery disease. **Conclusions:** The findings of the present study suggest that there is currently no reasonable scientific basis in the literature to recommend protein consumption above the current RDA (high protein diet) for healthy adults due to its potential disease risks. Further research needs to be carried out in this area, including large randomized controlled trials.

Keywords: Protein diet, Vatarakta, Ayurvedic Diet Pattern

1. Introduction

Protein is an essential macronutrient needed by the human body for growth and maintenance. Foods rich in animal protein are meat, fish, eggs, poultry, and dairy products, while plant foods high in protein are mainly legumes, nuts, and grains. The current recommended dietary allowance (RDA) for protein is 0.8 g protein/kg body weight/day for adults (for children 1.5 g protein/kg body weight/day, and for adolescents 1.0 g protein/kg body weight/day) [1]. However, high protein diets (defined as an intake above the current RDA) are promoted intensively by the nutritional supplements industry and they are considered to be "the gold standard" by celebrities like film stars, sportsmen. And our society is under the great influence of them. So most of the people are following their diet pattern without knowing the pros and cons of it. So such type of fad diet becoming popular for a short time and often making unreasonable claims for fast weight loss or health improvements.

An Ayurvedic diet provides guidelines that encourage mindful eating and consuming foods that are appropriate for your dosha, or constitutional type. The energy of each dosha helps determine what to eat to boost health, prevent or manage diseases, and maintain overall health and wellness.

"An Ayurvedic doctor can advise the right combination of foods to balance the dosha and make the diet more effective," says Samantha Semmalar, an Ayurvedic doctor at Body Holiday in St. Lucia.

Adverse Effects Observed

1. Disorders of Bone and Calcium Homeostasis

Diet which is high in protein generates a large amount of acid in body fluids [2]. The kidneys respond to this dietary

acid challenge with net acid excretion, and, concurrently, the skeleton supplies buffer by active resorption of bone resulting in excessive calcium loss [2]. Moreover, acid loading directly inhibits renal calcium reabsorption leading to hypercalciuria in combination with the exorbitant bone loss [3, 4]. In addition, it has been shown that increasing the protein intake from 48 to 141 g daily caused a highly significant elevation in urinary calcium, [7] Imbalance between dietary acid and base precursors leads to a chronic net dietary acid load that may have adverse consequences on bone.

2. Disorders of Renal Function

Low fluid intake and excessive intake of protein are important risk factors for kidney stones [3]. Protein ingestion increases renal acid excretion, and acid loads, in turn, may be buffered in part by bone, which releases calcium to be excreted by the kidney. This protein-induced hypercalciuria could lead to the formation of calcium kidney stones [4]. Furthermore, animal protein is also the major dietary source of purines, the precursors of uric acid. Excessive intake of animal protein is therefore associated with hyperuricosuria, a condition present in some uric acid stone formers [5].

The accompanying increase in dietary purine caused an increase in the excretion of uric acid. The overall relative probability of forming stones, calculated from a combination of the risk factors, was markedly increased (250%) throughout the period of high animal protein ingestion [8].

3. Increased Cancer Risk, Disorders of Liver Function, and Precipitated Progression of Coronary Artery Disease

Up to 80% of breast, bowel, and prostate cancers are attributed to dietary practices, and international

comparisons show positive associations with high meat diet [6]. It should be noticed that red meat is the main dietary source of saturated fat, which has been associated with breast and colorectal cancers [1]. Moreover, high-protein/high meat diet could cause disorders of liver function and precipitated progression of coronary artery disease. Hyperalbuminemia and elevated transaminases have been associated with high-protein diet [9]. Individuals on high protein supplements developed intermittent abdominal pain, transient elevations in transaminases, and hyperalbuminemia without there being any identifiable cause. The high-protein diets may precipitate progression of CAD through increases in lipid deposition and inflammatory and coagulation pathways [10].

4. Bad breath:

The body needs glucose and fat as fuel. But unfortunately, with a high protein diet, glucose is not available and the fats cannot be metabolized properly to fulfill this need. So the body uses ketones which form an alternative emergency energy source. Unused ketones tend to build up in the body, creating an imbalance. [11]

Their build up is also the cause for a certain type of bad breath and perhaps even the foul smell in the sweat! A certain amount of carbohydrates is needed to prevent this.

5. Toxic condition: [11, 12]

In fact, it has been found that certain toxic condition, from food allergies, get exacerbated in those with high protein diets. (Eg: aflatoxin from the skin of certain nuts). This is because a high protein diet also overloads our detox gland – the liver.

Calcium absorption is said to be hit when the protein intake is too high. This can lead to bone problems, especially in women. With less fibre, there is more likelihood of constipation.

6. Emotional issues:

In Ayurveda protein is regarded as a “grounding” food item. But how much of it can be good for you is a matter that is best left to ayurvedic experts. When it is overconsumed, it can cause dehydration (as explained above, due to kidney overload) and this in turn can increase your sense of anxiety, because it causes palpitations. When combined with a low carb diet, it can also lead to other seemingly unrelated emotional conditions: chronic fatigue syndrome making you feel tired. [11, 12]

If the fibre content is low, it can cause constipation, making you feel bloated. Without carbs, which are the nutrient trigger for the feel-good hormone serotonin, you are likely to feel depressed, without knowing the cause. It can also cause insomnia and further lead to nutrient imbalance, adding to your woes. Some chemicals are needed for triggering the oxytocin – motivational hormone, making you actually suffer low drive.

Ayurvedic review of all above disorders

1. Red meat or animal proteins are rich in purin. So causes kidney and bone problems. Uric acid crystals deposit in smaller joints and commonly causes Vatarakta i.e. Gouty arthritis. [13]
2. Due to low carb and high protein diet glucose and other metabolism get disturbed. Hence frequent indigestion is one of the complaints. Hence bad or foul smell of mouth or sometimes sweat is common. According to Ayurveda Agnimandya and Meda dhatwagnimandya are the causes because of guru ahar i. e. heavy diet like long term protein rich diet which could not digest by Pachakagni and Dhatwagni.

Diet pattern according to Ayurveda

Eat as fresh as possible. Avoid canned, preserved, frozen, or microwaved foods wherever possible. Always eat the freshest food that is available to you. [14]

Be mindful of how your body feels and the strength of your appetite. Eat enough light foods to only just satisfy your appetite. Do not overeat.

If you are eating heavy foods, eat enough to satisfy only half your appetite. Heavy foods are difficult to digest. If you are ill, only eat light foods.

- **Intake of six rasas or tastes.** At each meal, incorporate foods that are sweet, salty, sour, bitter, pungent, and astringent. [15]
- **Eat mindfully and with concentration.** Avoid talking, laughter, and other distractions to fully appreciate your meal and the wholesome benefits it provides.
- **Eat slowly enough** that you can savor the taste of the food.
- **Eat quickly enough** to prevent the food from getting cold.
- **Eat the proper quantity of food.** Be aware of hunger signals and signs of fullness to avoid overeating.
- **Eat only when your previous meal has been digested.** The guidelines suggest that you do not eat within three hours of your previous meal or snack, but do not go without food for longer than six hours.
- **Focus on breakfast and lunch.** Many Ayurvedic practitioners recommend eating a modest breakfast and a larger, satisfying lunch. Dinner may or may not be consumed, based on your hunger levels.

Pros

- Whole food focus
- Generalized nutrition
- Mindful eating
- Supports wellness
- May promote weight loss
- Flexible and sustainable

Cons

- Determining dosha may be difficult

- Complicated, sometimes restrictive rules
- Some herbs may cause side effects

Adopting a comprehensive Ayurvedic lifestyle that is tailored to suit your personal needs will yield results without restriction. This adaptability could help make the Ayurvedic diet more sustainable for the long-term. [16]

Health Benefits [17]

- Encourages Healthy Long-Term Habits
- Improves Well-Being
- May Help Manage Chronic Conditions
- Supports Weight Loss
- Promotes Weight Management

2. Conclusion

Despite the fact that short-term high protein diet could be necessary in several pathological conditions (malnutrition, sarcopenia, etc.), it is evident that “too much of a good thing” in diet could be useless or even harmful for healthy individuals

Individuals who follow these diets are therefore at risk. Extra protein is not used efficiently by the body and may impose a metabolic burden on the bones, kidneys, and liver. Moreover, high-protein/high-meat diets may also be associated with increased risk for coronary heart disease due to intakes of saturated fat and cholesterol or even cancer.

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