

A Review on Concept of Herbal Vs Synthetic Supplements

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Abstract: Food is a basic necessity of life it helps to stay healthy and be active. Your body needs all the nutrient in adequate amount and in a correct proportion to work and to make healthy body cells is called balanced nutrition, so well balance diets include the basic five foods carbohydrates, protein, milk, fruits, vegetables and fats and oil. Malnutrition truly means 'bad nourishment'. Herbal dietary supplements are frequently taken into consideration harmless. Natural vitamins are the best it increases immunity. However, in case you are poor in a specific nutrient, then taking dietary supplements is beneficial.

Keywords: Health, Immunity, Nutrition, Malnutrition, Supplements

1. Introduction

“What may be a healthy diet?” Many clinicians find themselves at a loss to answer this common question from patients. The overwhelming volume of knowledge generated by food and nutrition researchers including sometimes contradictory findings, the seeming flip-flops in recommendations, and therefore, the flood of misinformation in diet books, and therefore, the media can make it seem like explaining the essentials of healthy eating is comparable to describe the intricacies of a high energy physics. [1] A dietary supplement is additionally ingested orally in pill, capsule, tablet, or liquid form. It is not intended or represented to be used as a standard food or because of the sole item of a meal or diet and must be labeled as a “dietary supplement.”[2]

Health

In 1948, the World Health Organization (WHO) defined health with a phrase that modern authorities still apply. “Health may be a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”

In 1986, the WHO made further clarifications: “A resource for lifestyle, not the target of living. Health may be a positive concept emphasizing social and private resources, moreover as physical capacities.”

In 2009, researchers publishing within the defined health as the ability of a body to adapt to new threats and infirmities. [3] Receiving the correct nutrition during youth can positively impact the gut micro biota and so the developing system. It results in immediate benefits in terms of supporting the healthy growth and development of a personal but also over the long run by preventing and managing disease. In fact, studies show that for example allergies are also prevented by making the correct nutritional choices during the primary 1000 days of life. Human milk is the best source of nutrition for infants during the primary six

months of life, containing all the nutrients necessary for healthy growth and development. [4]

Immunity and Nutrition

In biology, immunity is the capability of multicellular organisms to resist harmful microorganisms. Immunity involves both specific and nonspecific components. The nonspecific components act as barriers or eliminators of a large range of pathogens regardless of their antigenic make-up. [5] Circulation concentrations of minerals, like iron and zinc, decline rapidly and dramatically with the inflammation related to infection. The gut may be a major entrance for pathogens, toxins and allergens and one in all the key roles of the system within the digestive tract is to differentiate between harmless antigens, like food, and health hazards. The development of a healthy system is therefore reliant on the establishment of a healthy gut micro biota in youth, which is directly linked to nutrition.[6] Nutritional therapy could be a healing system using dietary therapeutics or nutraceutical as a complementary therapy. This therapy is predicated on the assumption that foods can't only be sources of nutrients and energy but could also provide medicinal benefits. Per nutraceutical and nutritional therapy theory, it achieves this goal by using efficacy of such nutraceutical in detoxifying the body, avoiding vitamin and mineral deficiencies, and restoring healthy digestion and dietary habit. Phytonutrients basically is plant nutrients with particular biological activities in supporting human health. [7], [8]

Good nutrition is key to improving immunity. The WHO guidance on diet, especially during the present pandemic states that “good nutrition is crucial for health, particularly in times when the system might must fight back” (WHO, 2020). Although, presently, we don't have data concerning nutritional factors in relevance the chance and severity of viral diseases like COVID-19 the role of nutrition in immunity has been well established. For instance, a study on the role of axerophthol within the treatment of measles in children found a reduced risk of mortality and pneumonia

when antiophthalmic factor was administered over two days. [9]

Good nutrition is thus important in supporting an optimum system which might reduce the chance of viral infections. Nutrition is also the source of antigens to which the system must become tolerant, provide factors, including nutrients, that themselves might modulate immune maturation and responses, and supply factors that influence intestinal flora, which successively will affect antigen exposure, immune maturation and immune responses. [10] Nutritional immunity could be a process by which a host organism sequesters trace minerals in an attempt to limit pathogenicity during infection. Circulating concentrations of minerals, like iron and zinc, decline rapidly and dramatically with the inflammation related to infection. The decline in iron and zinc is believed to starve invading pathogens of those essential elements, limiting disease progression and severity. [11] We constantly seek for new substances which will improve biological function or make us fitter and healthier. Recently Western society has turned to foods as sources of those enhancers. These products are called, variously, vitamins, dietary supplements, functional foods, "nutraceuticals," phytochemicals, biochemopreventatives, and designer foods. These terms vary in meaning from country to country, as does regulation of those agents. Dietary supplements are ingredients extracted from foods, herbs, and plants that are taken without further modification outside of foods for his or her presumed health-enhancing benefits [12]. The concept of nutraceutical was modified as 'a product isolated or purified from foods that's generally sold in medicinal forms not usually related to food. Nutraceuticals are widely used for his or her health-promoting or disease-preventing properties especially in preventing aging-associated dis-eases including oxidative stress, depression, inflammation, arthritis, osteoporosis, gastrointestinal diseases, cardiovascular diseases, diabetes and cancer. [13] The broad canopy of 'nutraceutical' covers a good range of various, present, products, which are advocated to influence human health positively and then a spread of functional foods, fortified foods and dietary supplements have found their place here. [14]

Beliefs and Facts

A healthy diet includes a range of plant-based and animal-based foods that provide nutrients to your body. Such nutrients provide you with energy and keep your body running. Nutrients help build and strengthen bones, muscles, and tendons and also regulate body processes (i.e. blood pressure). Water is important for growth, reproduction and healthiness. Macronutrients are consumed in relatively large quantities and include proteins, carbohydrates, and fats and fatty acids. Micronutrients – vitamins and minerals – are consumed in relatively smaller quantities, but are essential to body processes. Making healthy food choices is very important because it can lower your risk of cardiovascular disease, developing some forms of cancer, and it'll contribute to maintaining a healthy weight. [15]

One of the foremost common nutritional problems of public health importance in India are low birth weight, protein energy malnutrition in children, chronic energy deficiency in adults, micronutrient malnutrition and diet related non-

communicable diseases. Poor nutrition can result in reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity. Since a healthy diet consists of various sorts of foods, the stress has been shifted from nutrient orientation to the food based approach. [16]

Foods is categorized in step with the function as-

Energy rich foods (Carbohydrates and fats)-whole grain cereals, millets, vegetable oils, ghee, nuts and oilseeds and sugars.

Body building foods (Proteins)- Pulses, nuts and oilseeds, milk and milk products, meat, fish, poultry.

Protective foods (Vitamins and minerals) - Green leafy vegetables, other vegetables, fruits, eggs, milk and milk products and flesh foods.

Importance of Excellent Nutrition

Food provides us energy to market and maintain tissue growth, and to control body processes. Nutritious food is cornerstone of health. Therefore, food should supply necessary nutrients in sufficient amounts to fulfill the body's needs.

- 1) Nutrition is expounded to improved infant, child and maternal health, stronger system to fight diseases, safer pregnancy and childbirth, lower risk of non-communicable diseases (such as diabetes, stroke and cardiovascular disease) and longevity.
- 2) Exclusive breastfeeding in first 6 months of life is crucial to put down the muse stone for future years. Breast feeding encompasses a number of benefits like lower risk of diarrhea, tract infections, sudden SIDS syndrome, allergies (e.g., asthma), obesity, Type 1 & 2 diabetes in later life, etc. It offers protection to mother against breast and ovarian cancer, and hip fractures in later life.
- 3) Recent evidence has demonstrated an association between prolonged breastfeeding and reduce postmenopausal risk factors for cardiovascular (CV) disease.
- 4) Early life under-nutrition is an underlying cause related to a couple of third of young child deaths. those that survive become stunted, their capacity to resist disease, to hold out physical work, to check and progress at school, engage working in adulthood are all impaired across the life course.
- 5) Later within the life course, poor diet and nutrition together with obesity, are important causes of the many non-communicable diseases (NCDs) like hypertension, diabetes, cancer, stroke, and ischemic cardiopathy etc. [17]

Effect of Nutrition/ Effect of Malnutrition

The factors include insulin resistance, elevated homocysteine, oxidative stress, elevated cholesterol, hypertension, heavy metal toxicity, stress, and inflammation. Each of those factors are often influenced by nutrition and every, in turn, impact our nutritional needs. Herbal supplements are often considered harmless. Herbal supplements is also safer than synthetic drugs, but each

herbal supplement should be evaluated on its own merits. What's most vital is an herbal supplement's risk-benefit profile[18] Herbs/medicinal plant/homemade remedies are less costly than the synthetic drugs and majority peoples in rural/backward area have blind faith on them. Because they'll treat any disease by using them with none lethal side effects. Herbal therapy may be a holistic therapy, integrating emotional, mental and spiritual levels. Life style, emotional, mental and spiritual considerations are a part of any naturopathic approach. About 8% of hospital admissions within America are because of adverse or side effects of synthetic drugs. Approximately 100,000 people every year die thanks to these toxicities. [19] [20]

Malnutrition

Malnutrition actually means "bad nourishment". This condition is typically seen when the body is divested from its minimal daily requirements. In some parts of the planet Famine could be a primary reason behind Malnutrition and is endemic. Substantial improvements are made in health and well-being since India's independence in 1947 but, still quite 1/2 all children under the age of 4 are malnourished, 30 percent of newborns are significantly underweight, and 60 percent of ladies are anemic. Chronic food deficits affect about 792 million people within the world, including 20% of the population in developing countries. Worldwide, malnutrition affects one in three people and every of its major forms dwarfs most other diseases globally. Malnutrition affects all age groups, but it's especially common among the poor and people with inadequate access to health education and to scrub water and good sanitation. Over 70% of kids with protein-energy malnutrition sleep in Asia, 26% board Africa, and 4% in geographic region and also the Caribbean. The planet Bank estimates that India is ranked second following Bangladesh in producing the malnourished children. These 2 Asian countries dominate even geographical area. In India mortality rate is high in Madhya Pradesh followed by Assam whereas Kerala occupies the last place.

Nutritional Issues Protein-Energy Malnutrition (PEM)

PEM is more commonly affecting children between the ages of 6 months and 5 years. PEM has many short-term and long-term physical and mental effects, including growth retardation, lowered resistance to infections, and increased mortality rates in young children. Two major forms are marasmus and kwashiorkor. Marasmus results from prolonged starvation. The affected child (or adult) is incredibly thin (skin and bones), most of the fat and muscle mass having been expended to produce energy. Marasmus is that the most frequent style of PEM in conditions of severe food shortage. Associated signs of the condition are

- a) A skinny "old face"
- b) "Baggy pants" (the loose skin of the buttocks hanging)
- c) Affected children may appear to be alert in spite of their condition.
- d) There's no edema of the lower extremities.
- e) Prominent ribs

Classification of PEM

The Gomez classification is widely followed and as per the classification the disorder is of the subsequent types Degree of PEM you look after desired body wt. for age and sex

- (a) Grade I. Severe Malnutrition: 90%-100%
- (b) Grade II. Moderate Malnutrition: 75%-89%
- (c) Grade III. Mild Malnutrition: <60%

2. Treatment

The treatment guidelines laid down by the WHO are of the subsequent stages:

- Initial treatment
- Rehabilitation
- Follow up

The initial treatment is sometimes focused on treating Hypothermia, Hypoglycemia, Dehydration, Anemia and the other associated infection. The duration of the initial treatment is sometimes for 2- 7 days which usually betters the child's appetite. If the kid shows no sign of progress special measures are to be adapted. Systemic infections are usually treated by administering either the primary line or the second line choice of medicine

1) First-line treatment

Children with no apparent signs of infection: Cotrimoxazole (25 mg of Sulfamethoxazole + 5 mg of Trimethoprim/kg) orally twice daily for five days. Children with complications (Septic shock, Hypoglycemia, Hypothermia, Skin infections, Respiratory or tract infections, or who appear lethargic or sick): Ampicillin, 50mg/kg IM or IV every 6 hours for two days, followed by Amoxicillin, 15mg/kg orally every 8 hours for five days (if Amoxicillin is unavailable, Ampicillin, 25mg/kg orally every 6 hours should be given) and Gentamicin, 7.5 mg/kg IM or IV once daily for 7 days.

2) Second-line treatment

If the kid fails to boost within 48 hours, Chloramphenicol, 25mg/kg IM or IV every 8 hours (or every 6 hours if meningitis is suspected) is added to the above regimen for five days. The treatment should be specific for specific form of infections. The antimicrobials should tend for a minimum of 5 days. Vitamin deficiency is sometimes treated by administration of the vitamins. The dose is as follows: 150000 International Units (IU) orally for infants 12 months old. Severe Anemia is typically treated by transfusion.

3) Rehabilitation

The principal tasks during the rehabilitation phase are:

- Encourage the kid to eat the maximum amount as possible;
- Re-initiate and/or encourage breastfeeding as necessary;
- Stimulate emotional and physical development; and
- Prepare the mother or carer to still take care of the kid after discharge.

4) Follow up:

Proper follow up schedules should be designed to forestall the danger of relapse of the disorder. The kid should be seen after 1 week, 2 weeks, 1 month, 3 months and 6 months. The mutually aggravating effects of malnutrition and infection are well established. Summarized the human and animal data on interactions, often synergistic but occasionally a tagonistic, between nutritional

deficiencies and infectious illness. [21-23].

Childhood Malnutrition in India

Malnutrition could be a term that refers to any deficiency, excess or imbalance in somebody’s intake of energy and/or nutrients. In simple words, malnutrition can either flow from to inadequate intake or an excess intake of calories. The term malnutrition covers two broad groups of conditions namely under nutrition and over nutrition. Malnutrition may be a major contributor to disease burden, with over half global deaths in children younger than 5 years old due to under nutrition, the overwhelming majority of which are in low-income and middle-income countries, including India. [24]

The India State-Level Disease Burden Initiative has reported a varied epidemiological transition across the states of India since 1990 as a part of the world Burden of Diseases, Injuries, and Risk Factors Study (GBD). Some subnational studies in India have reported the trends in one or more malnutrition indicators and a few from other countries have reported trends in malnutrition burden.[25] It absolutely was reported that under-weight among under-five children ranged from 39% to 75%, stunting from 15.4% to 74% and wasting from 10.6% to 42.3% in numerous parts of the country. On the opposite hand, only a few studies had been conducted to assess the prevalence of overweight or obesity among under-five children.[26]

Diet Plan

- 1) Fruits, vegetables, legumes (e.g. lentils, beans), nuts and whole grains (e.g. unprocessed maize, millet, oats, wheat, brown rice).
- 2) At least 400grams (5 portions) of fruits and vegetables every day. Potatoes, sweet potatoes, cassava and other starchy roots don't seem to be classified as fruits or vegetables.
- 3) Unsaturated fats (e.g. found in fish, avocado, nuts, sunflower, canola and olive oils) are preferable to saturated fats (e.g. found in fatty meat, butter, palm and copra oil, cream, cheese, ghee and lard). Industrial trans fats (found in processed food, fast food, snack food, fried food, frozen pizza, pies, cookies, margarines and spreads) aren't part of a healthy diet.
- 4) Less than 5 g of salt (equivalent to approximately 1 teaspoon) per day and use iodized salt.[27]

Nutrients	Food Items	Children (4-10 yrs)	Adult		Oldster	
			Men	Women	Men	Women
Calories		1200 – 1700KCal	2000 - 3000KCal	2000 - 2500KCal	2000 - 2500KCal	1700 - 1900KCal
Carbohydrates	Cereals and grains	175	400g	300g	285g	245g
Proteins	Fish, meat, egg, milk & soyabean	60g	70g	58g	68g	55g
Fats	Butter, oil, cheese & dry fruits	40g	80g	65g	58g	50g
Vitamins	Sprouts, fruits and vegetables	0.081g	0.115g	0.109gg	0.051g	0.048g
Dietary fibres	Fruits, vegetables and whole wheat bran	20g	30g	30g	20g	17g
Minerals	Sprouts, fruits and vegetables	10.20g	11.718g	10.65g	9.14g	8.14g

Why Supplements?

Herbal health products are organic supplements taken additionally to your diet for improving digestion, immunity, cardiovascular health etc. These products are preventive in nature and help circumvent a disease instead of that specialize in the curative aspect of things. They will be used for therapeutic purposes and using holistic wellness to enhance overall lifestyle. [28]

Dietary Supplements

- 1) According to the Council for Responsible Nutrition (CRN) in Washington DC, approximately 68% of yank adults used dietary supplements in 2007 compared with 66% in 2006. Those that considered themselves to be regular users of dietary supplements increased from 46% in 2006 to 52% in 2007 (CRN, 2007).
- 2) A popular marketing statement for varied dietary supplements and botanical products is that they “boost” the system. Many of the foremost popular herbs sold within the u. s., including Echinacea, cranberry, ginseng, milk thistle, Astragalus, and also the medicinal mushrooms, are taken for his or her purported system effects
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3. Advantages and Disadvantages

Known as phytomedicines- herbal supplements are made of plant’s seeds, berries, roots, leaves, bark, or flowers for medicinal purposes.

These supplements are highly valued for the tremendous healing benefits and for no or very minimal side effects. Herbal supplements are strongly recommended in curing intense and protracted sickness.

Lowers Risk of Side Effects:

Herbal supplements are well tolerated by folks that are allergic to components in pharmaceuticals. Herbs are known to possess fewer side effects whether or not they're taken for an extended duration and improve overall wellness.

Symptomatic Relief:

Herbal supplements help boosting immunity without side effects and are simpler in providing symptomatic relief, especially while fighting allergies.

Cost Effective:

A major advantage of herbal supplements is its affordability. Herbal supplements are inexpensive, pocket-friendly and are available without prescription.

Readily Available:

Herbal supplements are available as over the counter medicines that don't require a prescription. Supplements product of peppermint, chamomile, basil, turmeric, honey, garlic, ginseng, amla, licorice are quite popular fast

paced supplements which will treat cough, cold, flu, inflammation, pain etc.

Treats Chronic Conditions:

Do you know herbal supplements can help in treating chronic conditions? Herbal supplements fabricated from Shatavari are widely recommended in treating infertility issues, while pepper, fenugreek tablets keep blood glucose under check. Take lotus stem permanently cardiovascular health and choose flowering tree to beat obesity.

- 1) Some variety of dietary supplement is taken by over 70% of USA citizens on a daily basis and therefore the supplement industry is currently business with a gross of over \$28 billion. Supplements don't have to be registered or approved by the FDA before production or sales. Under the Dietary Supplement Health and Education Act of 1994 (DSHEA), FDA is restricted to adverse report monitoring post-marketing. Despite widespread consumption, there's limited evidence of health benefits associated with nutraceutical or supplement use in well-nourished adults.
- 2) In contrast, a little number of those products have the potential to provide significant toxicity. Additionally, it's rare that patients disclose supplement use to their physicians.
- 3) Therefore, the chance of adverse drug-supplement interactions is important. An outline of the most important supplement and nutraceutical classes is presented here along with known toxic effects and potential for drug interactions.[30] [31]

Synthetic Nutrients

- 1) You may be confused about the organic label after you first came upon it at the supermarket, so also expressed shock at the upper prices at which they're sold. But with mindful eating and long-term health becoming more important for many, organic foods and diet are being picked by more and more people. And, going by what most up-to-date studies must say about it, switching to organic foods is that the healthy choice today.
- 2) The research mentioned above shows that organic foods have low levels of toxic metabolites, including toxic heavy metals like cadmium, synthetic fertilizer and pesticide residues. It also links organic food consumption with reduced exposure to antibiotic-resistant bacteria.
- 3) Another study in Environmental Research in August 2020 observed four diverse families within the US who followed a daily diet for every week, and an organic diet for an additional week, to gauge if their toxic glyphosate levels declined. Glyphosate (aminomethylphosphonic acid) may be a non-selective herbicide which is employed extensively in non-organic farming within the US and also the world. It's widely employed in India yet. The study found that in the week during which the families consumed a purely organic diet, their glyphosate levels went down by 70 percent.
- 4) The downside switching to organic foods and a predominantly organic diet can help reduce the toxicity in your body. But while the case for selecting organic is powerful, there is a huge downside thereto too. Organic farming focuses on enhancing soil and water quality,

preventing pollution and promotes the event of a self-sustaining cycle of crop and livestock rearing - and every one of this, without the utilization of fertilizers on crops and antibiotics in livestock, is quite expensive.[32] [33]

- 5) Most people don't get sufficient nutrients from their diet. This makes them consume synthetic nutrients like multivitamin supplements.

Natural nutrients: Natural nutrients are those that are obtained from whole food sources.

Synthetic nutrients: Synthetic nutrients are called isolated nutrients as they're made artificially by an process.

Natural vs Synthetic Nutrients

- 1) A majority of the supplements present within the market today are made by a man-made process. The supplements include vitamins, minerals, antioxidants and amino acids. They're available within the kind of a pill, capsule, tablet, powder or liquid and are designed specified they mimic the way natural nutrients act within the anatomy.
- 2) Synthetic nutrients are chemically similar to those found in food. The synthetic nutrients are produced differently from the way plants and animals produce them. So, in spite of getting similar chemical structure, the shape may react in a very different manner to synthetic nutrients. Moreover, how well the body absorbs synthetic nutrients is unclear.
- 3) It is evident that natural nutrients are beneficial to health but there are mixed evidence with respect to synthetic supplements.
- 4) There is not any clear evidence to prove that synthetic nutrients benefit healthy, well-nourished people. However, there are some folks that is also benefitted by consuming synthetic supplements and that they are:
 - The elderly
 - Vegans and vegetarians
 - Pregnant and lactating women
 - Women of childbearing age
 - People having nutrient deficiencies
- 5) Consuming large amounts of synthetic nutrients is harmful to health. Generally, the recommended daily dosage is safe for many people but they have to exercise caution.
- 6) Research says that synthetic nutrients cannot replace a healthy and diet. Natural nutrients are the simplest. However, if you're deficient during a particular nutrient, then taking supplements is useful.
- 7) Some studies say that synthetic nutrients are beneficial et al. say that they're of no use and even harmful. The ultimate word is that the results of the studies are inconsistent. So, the 'Natural Vs. Synthetic Nutrients' debate remains on![34]

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