

## **The Role of Dietary Supplements in Promoting Human Health against Diseases: A Review**

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### ***Abstract***

The dietary supplement defined as any substance vitamin and mineral or any added chemical material, products of herbal, the botanicals, the amino acids, or any other preparation can be ingestible, which is put in to diet to support the health of man. The supplements are utilized universal and represent a wide group of products, which are recognizable from the traditional foods and various drugs. The absent of vitamins will certainly lead to various deficiency diseases like scurvy disease, beriberi disease, disease rickets and pellagra. The present review investigated in a systematic method the most significant researches and studies on the major used widespread supplements and their effects and results on advantages or danger to man health. It covers supplements that taken by all ages; young men, elderly men, pregnant female, the persons suffering from deficiencies and athletes.

***Keyword:*** Supplements; Human health; Diseases.

### ***Introduction***

The dietary supplement defined as any substance vitamin and mineral or any added chemical material, products of herbal, the botanicals, the amino acids, or any other preparation can be ingestible, which is introduced to diet to support the health of man. The supplements are utilized universal and represent wide group of products, which are recognizable from the traditional foods and various drugs [1-5], as shown in figure (1). For female, the dietary supplements are aimed to protect the integrity of bone and to stop the disease of osteoporosis. Generally, the mostly used of supplements are the multivitamins, the mineral, calcium supplements and omega-3 [6]. The consumers themselves decisions to utilize dietary supplements. The health advantages of supplements are suspicious. The absent of the vitamins will lead to various deficiency illness like scurvy disease, disease rickets and pellagra. The vitamin consist of a normal well-balanced diet is adequate to avoid the above diseases [7]. The Dietary studies and researches refer that there is relationship between the low consumption of vegetable, fruits and micronutrient intakes by human [8-11]. The significance of micronutrients in the prevent disease is exhibited widely. Since the inverse correlation between the consumption of vegetable and fruit and chronic diseases risk was first recorded, study and research on function of micronutrient supplements to prevention of

diseases has intensified [12]. The Dietary supplements, several of which supply higher levels of nutrient compare could be get from the diet of food [13], have been demonstration to participate to a large micronutrient proportion intake of human [14]. Dietary Supplement costumers and users have been distinguished like possess a positive behavior towards their good health [15-16]. Many studies and researches support the “inverse supplement hypothesis” which those most utilize the supplements are those least likely to need these supplements [16-17].

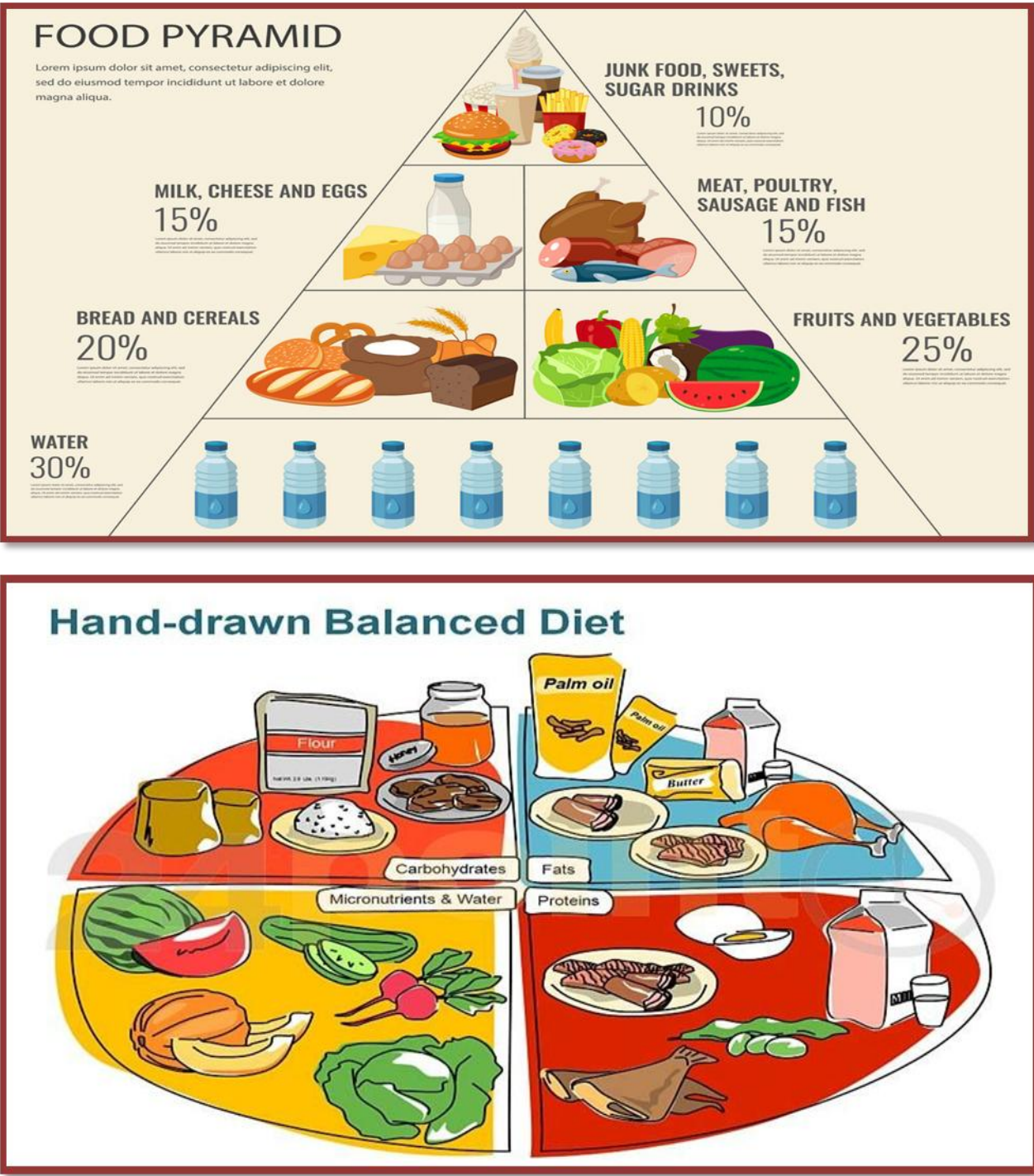


Figure (1): Conventional food, the balanced and healthy eating

## ***History***

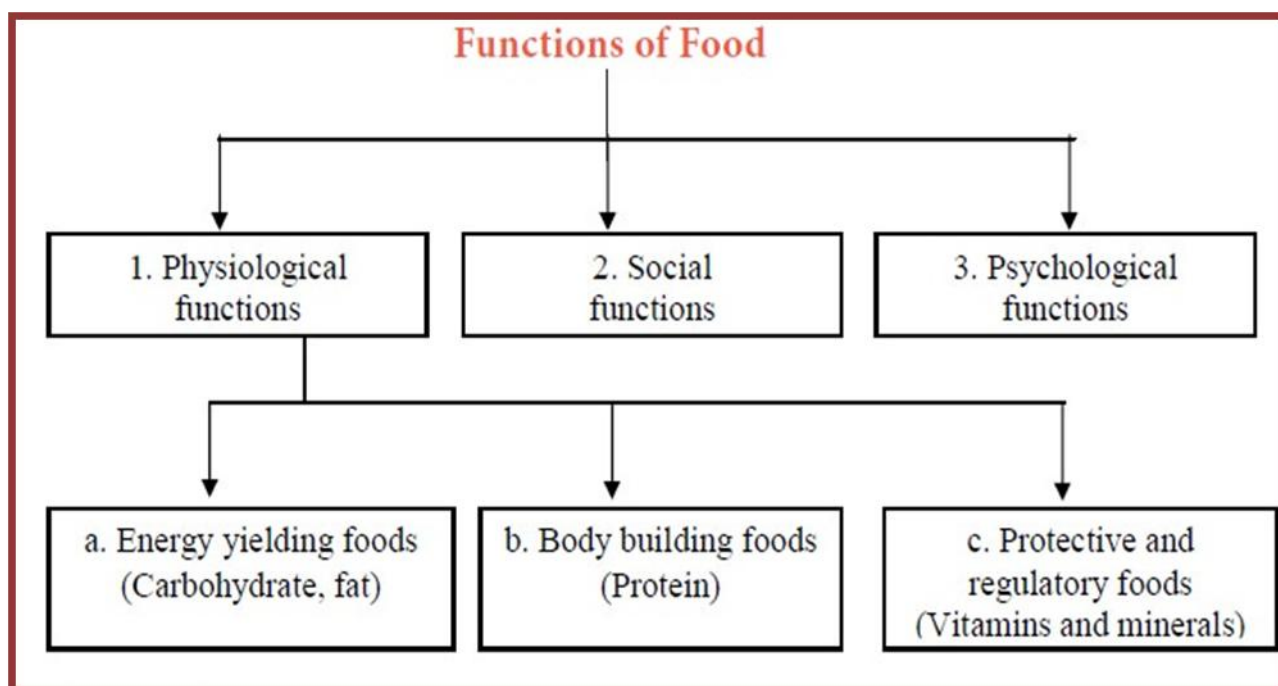
From the civilization starting of diet system of human was generally plant vegetation and sea-foods (especially fish). The hunters participate the products of meat by a big game. This type of system diet of all mans until approximately 10,000 BC, at time that needed to agriculture field development and animal management that provided more amount of meat and more amounts of grains for all people. Nobody have any knowledge about the different types of vitamins, the types of minerals, the advantages of proteins, the carbohydrates and the lipids and their function in the human nutrition. The people in the worldwide developed local kitchens with usually local various products that preserve their health without diseases, whereas by experiment and wrong choose a foods diversity and the ways of cooking that can resulting in physical strength and more fertility for them. The native cultures wisdom knew that different foods and various herbs had private features for the energy, the nature of nutrition and extra health advantages for the young men, children, pregnant women and the elder man. The system of diets was supported by supplements to prevent the deficiencies of various vitamins and other essential elements. The drink of tea, that obtained from the pine bark and required in treatment the scurvy illness, containing vitamin C. In 1749, James Lind investigates that the fruits of citrus can be prevented and stopped scurvy illness [18-20]. Discovery of activity of all vitamins types was a major scientific accomplishment in explaining association existing among the various nutrition, the case of disease and health. By the 1920s and 1930s, important steps happened in study of vitamin and research and mass marketing of synthesized vitamin C grow in 1935 by using trading name Redoxon. After that, large steps have been made in vitamin and other essential elements of the supplement [21]. The motivations for supplements consumption are to protect and prevent illness, to promote the mental and the health, to promote sport performance and to recompense for supplement deficiencies [22-23]. The elevating availability of supplements because possess only positive impacts on the health, that supported by Council of Responsible Nutrition [24], referred that necessary for monitoring of positive impacts of supplements by medical community. The available data and information suggest that the knowledge of physician about positive impacts of supplements is very limited [25]. In a recent research, different interviewed specialists, they lack information and understanding food supplement about safety and efficiency, and about 73% of specialists did not know how or where to describe the side impacts associated with supplements in their patients [26].

## ***Dietary supplements classification***

The food supplements are distributed into two groups depending on their use, based on European food information council [27].

1. Dietary supplements as products of food. They are help to supplement the diet.
2. the foodstuffs for special nutritional uses as a beverage, it is made up with special structures like a special diet for some population group e.g. for nutrition during life cycle like the healthy infants, toddlers, orderly, and patients suffering from metabolism disorder or for groups of human in a special physiological situation such as pregnant and lactating female. The supplements can be categorized based on different aspects, like their origin, the natural sources, their chemical composition, and physiological functions. Figure (2) demonstrates the groups of supplements according on their physiological role and function

[28].



**Figure (2): demonstrates the groups of supplements according to their physiological role and function**

### *Medicine Use*

#### *Dietary Supplement in Cancer*

The supplements of food are broad utilized among cancer persons who perceive them to possess a strong anticancer features and antioxidant features. The prevention studies of cancer have fundamentally been negative, with several notable sides and advantage impacts. These studies demonstrated that  $\beta$ carotene reduce lung risk and cancer of stomach , vitamin E reduce cancer of prostate adenoma and selenium decreased stomach cancer in patients with low selenium levels but elevated averages in those with high levels. Both the supplementation of the vitamin E and  $\beta$ -carotene elevated overall mortality [29-30]. The calcium is another food supplement used in human health. An investigational study utilizing meta-analysis supports relationship between the higher calcium intake and decreased risk of the breast cancer [31]. The higher calcium intake in a meta-analysis was relationship with decreased risk of the colorectal cancer [32].

#### *Management of diabetes*

Various food supplements have been utilized to treat the disease called diabetes mellitus and related complications (table 1) [33]. Common causes that the supplements of food are utilized inclusive decreasing glucose, decreasing the blood pressure, and decreasing the levels of total cholesterol, treat the resistance of insulin, and prevent the other complications that related to diabetes [34-35]. Food supplement utilize has been locate to be relatively prevalent among a subset of persons with diabetes mellitus [36-37].



**Table (1): common dosage and adverse effect supplements of used in diabetes**

<b>Dietary Supplement</b>	<b>Typical Dosing</b>	<b>Adverse Effects</b>
Alpha-lipoic acid	600-1,200 mg daily	Generally rare Hypoglycemia (with insulin or sulfonylurea) Rash, thiamine deficiency, interaction with thyroid treatment
Biotin <sup>a</sup>	2 mg daily	Well tolerated up to 300 mg daily for up to 30 months without significant adverse effects reported
Chromium	400-800 mcg daily	Excessively high intakes can cause renal or liver failure Skin reactions, mood disturbances, thrombocytopenia May have increased risk of hypoglycemia with insulin or sulfonylureas
Cinnamon (water-extracted cinnamon contains less coumarin)	1 g (1/2 teaspoon) daily	Hypoglycemia (with insulin or sulfonylurea) Patients with liver disease should use with caution Topical allergic reactions
Cobalamin (vitamin B <sub>12</sub> ) <sup>b</sup>	0.25 mg three times daily	Generally well tolerated when administered orally and intramuscularly Allergic reactions (erythema, urticaria) have been reported
Fenugreek	5-100 g daily	GI distress (bloating, gas, diarrhea) Can enhance the effects of insulin and sulfonylureas (hypoglycemia) Can interact with blood thinners
Folic acid (vitamin B <sub>9</sub> ) <sup>b</sup>	400 mcg daily	Well tolerated in dosages <1 mg/day Dosages of 5 mg/day or higher can cause rash, abdominal cramps, and diarrhea
Pyridoxine (vitamin B <sub>6</sub> ) <sup>b</sup>	100 mg daily for 2 weeks	Generally well tolerated, long-term safety uncertain
Thiamine (vitamin B <sub>1</sub> )	100-150 mg three times daily (doses 300-600 mg have been studied in diabetes)	Dermatitis and other hypersensitivity reactions People prone to allergy may experience skin rashes Tenderness and induration can occur with intramuscular injections
Vitamin D (cholecalciferol [vitamin D <sub>3</sub> ])	Single dose of 100,000-200,00 IU once OR weekly doses of 40,000 IU for 6 months	Generally well tolerated, but vitamin D intoxication can occur (anemia, hypercalcemia)

### ***Bone Mineral Density (BMD)***

The bone mineral amount contained in tissue of bone is known as density of bone mineral. BMD reflects the bones strength in a person represented by calcium availability of such a person. The insufficient density of bone mineral is related with bone fragility at a later stage in life that leads to a high danger and risk of developing bone related diseases such as osteoporosis. To cater to this risk, individuals need to ingest food containing sufficient calcium amount at the early and mid-stage of human life as a means of primary prevention. The intake diet containing adequate calcium must extend via the orderly stage. many studies have showed the efficiency of calcium supplement in density of bone mineral, one of which was done among adolescent girls with aged 15-16 in New Zealand country by [38].

### **Conflict of Interests**

The authors of this paper declare that he has no financial or personal relationships with individuals or organizations that would unacceptably bias the content of this paper and therefore declare that there is no conflict of interests.

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## Ethical Approve

We declare that the study does not need ethical approval.

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