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Review Article

Review on dietary supplement in domestic market

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ABSTRACT

In day today life where the quality of organic foods is being deteriorated on that particular point people started taking the extra protein or vitamin or minerals as same. The product taken orally that contains some dietary ingredient projected to supply the body need. There are more than 29000 dietary supplement products available in Indian market. People affected with some long-lasting disease like Diabetes Mellitus, Hypertension, Chronic kidney disease are being Prescribed to use Dietary Supplement along with their medication. Patients are unable to fulfil their nutritional foods through their regular diets, they are today identifying the importance of nutritional supplements to fulfil their nutritional gaps. Although these supplements are being good for patient's health but sometimes it shows the adverse effect as well. So, on this general review we will get to know about the effectiveness and common usage of widely used dietary supplement.

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1. Introduction

Dietary supplement is now being in high demand as it is very popular among young generation. Dietary supplements are nothing but it is the type of food which helps to get adequate amount of essential nutrients.^{1,2} This can improve overall health and helps in management of some health conditions. Patients are buying various supplements as meal additional which finally helps a person to get free of weakness and makes energetic following physicians and dieticians in India. Calcium and vitamin D help keep bones strong and reduce bone loss. Folic acid decreases the risk of certain birth defects. Omega-3 fatty acids from fish oils might help some people with heart disease.³ A combination of vitamins C and E, zinc, copper, lutein, and zeaxanthin (known as AREDS) may slow down additional idea loss in people with age-related macular degeneration (AMD)It is the therapeutic need for diabetes, Chronic kidney disease,

Anaemia and others. It is also being used for Muscle building, proper toning of the body and in competitive sports as well. In addition to vitamins, dietary supplements can contain minerals, herbs or other botanicals, amino acids, enzymes and many other constituents. Dietary supplements come in a variety of forms, including tablets, capsules, gummies, and powders, as well as drinks and energy bars. Popular supplements include vitamins D and B12; minerals like calcium and iron; herbs such as echinacea and ginkgo; and products like glucosamine, probiotics, and fish oils. In Indian market there are certain types of dietary supplements like vitamin, Minerals, probiotics, proteins and amino acids etc. According to statistical study of Indian market Dietary and nutraceutical market are expected to reach 60 thousand crores by 2023.^{3,4}

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2. User Collection That are Taking Dietary Supplements

1. Childrens, preschoolers, entire students age group for better academic and extracurricular activities under the age of 8 to 18
2. Teen agers and Adults for bodybuilding and healthy living under the age of 19 to 35
3. Senior citizens suffering from long term chronic disorders like osteoarthritis, Rheumatoid Arthritis, Diabetes mellitus, Hypertension, Chronic kidney disease.⁵



Figure 1: Availability of dietary supplements

2.1. Mechanism of action

Although dietary supplements are being widely used as self-medication but it still has some potential toxicities and adverse reaction. Metabolic activation of precise ordinary products from herbal and dietary supplement is mediated by hepatic cytochrome P450 or intestinal bacteria and produces biochemical reactive/toxic metabolite that fixes to cellular reduced glutathione or macromolecules and form responsive metabolites -glutathione/protein/DNA adducts.

The key inductive role of metabolic activation in currently herbal and dietary supplement have been widely applied to prevent and treat various diseases & disorder. According to the diverse catalysis of metabolic stimulation, they are divided into CYP450s mediated metabolic instigation and intestinal bacteria facilitated metabolic activation. Additionally, CYP450s mediated metabolic activation are considered into three categories, pyrrolizidine alkaloids, furan derivatives, epoxy diterpenoids, anthraquinones aristolochic acids, bisbenzylisoquinoline, alkenyl benzenes, based on the types of potentially toxic natural products.^{6,7}

2.2. Product type obtainable in Indian market

1. Vitamins and Mineral Dietary Supplements
2. Herbals Dietary Supplements
3. Proteins Dietary Supplements
4. Others

2.3. Formulation accessible in Indian market

1. Tablets
2. Capsules
3. Powders
4. Liquids & Liquid Orals
5. Soft Gels
6. Gel caps

2.4. Delivery channel

1. Pharmacies and Drug Stores
2. Supermarkets and Hypermarkets
3. Online Channels

2.5. Application of dietary supplement

1. Additional Supplements
2. Medicinal Supplement
3. Sports Nutrition

2.6. Contraindication

A 2013 study on same found that numerous products were of low quality, 1/3rd did not contain the active ingredient appealed some are 1/3rd confined unlisted materials. In a genetic analysis of herbal supplements, 80% of samples contained from animal DNA that was not known as an ingredient on the product labels. In about botanical products, assumed ingredients were used to increase the bulk of the product and reduce its cost of manufacturing, while potentially violating certain religious and/or cultural limitations on consuming animal ingredients, such as cow, buffalo or deer. A study of dietary supplements sold between 2007 & 2016 identified 776 that contained unlisted pharmaceutical drugs many of which could interact with other medicines and prime to hospitalization. 88% of the adulterated supplements were marketed

for weight loss and sexual performance, with many containing prescriptions erectile dysfunction medication. Muscle building supplements were contaminated with anabolic steroids that can lead to health complications affecting the kidney, heart cause gynecomastia Several body building products likewise limited antidepressant & antihistamines.⁸ Contempt these findings, fewer than half of the adulterated supplements were recalled. As there are some more contraindication of usage of dietary supplement at higher dosage or instead of prescribed medicine that might cause big problem. Examples includes -if a patient is using antioxidant supplements like vitamin C & E can decrease the efficiency about type of cancer chemotherapy. Tradition of vitamin K can decrease the capability of blood thinner warfarin to stop blood from clotting. Excessively Vitamin A can cause headache & liver damage and reduce bone strength as well.⁹

2.7. Business turnover in domestic market

Company	Turnover (cr)	Product
Amway	1800cr	Nutrilife
Pfizer	1200cr	Bcosule
Merck	1000cr	Evion400/600mg
Abott	67.79cr	Ensure
GlaxoSmithKline	2075cr	Horlicks, Maltose
Dabur	5064371cr	Chawanprash, Glucose d
Himalaya	743cr	Hiowna powder
Patanjali	2000cr	Aloe vera juice, Amla juice

3. Conclusion

Patient should take the right audited products as dietary supplements considering the multiple type of side effect. The country like India where various products markets is very important to sustain as well as improve the economy for the sake of patient health. From this general review we can conclude there is a high range of profit is there in supplement market. But the only thing which have to give

a proper look is efficacy and choosing the correct product under the supervision of professionals.

4. Source of Funding

None.

5. Conflict of Interest

None.

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