

QualPharma

Learning the roots

GENERIC

**BRANDED
V/S
GENERIC
MEDICINES**

WHICH ONE TO PRESCRIBE?

GENERIC

GENERIC

BRANDED

**Checklist for an Internal
Audit of a Food and
Pharmaceutical
Company**

BETULINIC ACID
A Review on Potent Anti-
cancer Agent

Things every Pharma
manufacturing member
should know

VALUES
Depleted or depleting?

BRANDED

BRANDED

NUTRACEUTICALS
The Past, Present and Future

Nutraceuticals

The Past, Present and Future

“Nutraceuticals are natural or bioactive chemical compounds claiming to be health promoting and disease preventing products with some medicinal properties.”

Introduction

Human beings have always looked at natural products as a major source of nutrition since ancient times. **"Let food be thy medicine and medicine be thy food" were the words said by Hippocrates, the Father of medicine** around 2500 years ago.

Nutraceuticals, the functional foods is based on the concept of “personalised medicine” for maintenance of health. The increasing interest among the consumers and their awareness among the health have enormously led to the increase in the growth of market for these products in the recent years. This article mainly focuses to provide complete evolution of nutraceuticals since the past to the present and the future.

A piece of History:

Role of daily dietary requirements has always paid an important role even before the development of the concept of Nutri-

tion. It has always been an interested area of research. Biomedical research for the past 20 years has revealed that diet plays an important role in the prevention and progression of many of the major chronic diseases, such as atherosclerosis and cancer. In 1989, **The Foundation for Innovation in Medicine** (New York, U.S.), coined the term **“Nutraceutical”**, to provide the name for this rapidly growing area of biomedical research. Dr. Stephen DeFelice (1992) defined nutraceutical as **“any substance that may be considered a food or part of a food and which provides medical or health benefits including the prevention and treatment of disease”**.

The present status:

The present status of Nutraceuticals are gaining importance worldwide because of their ability to effect or cure several diseases. An increasing demand for health-promoting food products as well as non-food products containing the active principles present in these health-promoting foods among the consumers



Dr Sanjay Agrawal

Dr Agrawal founded PHARMA CONSULTANTS and INVENTOR to fulfill his passion, capabilities and desire to assist pharmaceutical companies around the globe. He has actively worked in pharmaceutical and related industries for more than 28 years and started this firm in 2005. He is **Editor-in-Chief** of renowned IJM Today and honorable member of the editorial board of **The Antiseptic**.

has been shown by various marketing surveys carried out by different industries. Vitamins, minerals constitute about 85% of the global market today while antioxidants and related products account for about 10%.

The segments such as herbal extracts occupy 5% of the market. The US has been the major market for nutraceuticals with India and China emerging as the fastest growing markets for nutraceuticals.

Traditional medicine is also finding its place in the present healthcare system in the form of herbal dietary supplements. Dietary supplements have been developed to manage diseases. Ketogenic diets, comprising of foods high in fat and low in protein and carbohydrate content, have been reported to improve seizure control. Cereals and grains is an area of nutraceuticals in which calcium fortifica-

tion is strongly present. Researchers have found that minimally refined grains may reduce the incidence of diabetes.

Phytoestrogens increase oestrogens levels when hormonal levels are low. This action may prevent against both hot flushes and breast cancer.

Phytochemicals present in the edible plant materials and plant extracts e.g. isoflavones present in soyabeans and different phytosterols in *Cissus quadrangularis*. The role of traditional soy-food in disease prevention and treatment has gained worldwide recognition because of its antidiarrhoeal, hypolipidaemic, anticancerogenic and antiosteopo-

rotic effects. Isoflavone phytoestrogens in soy, such as daidzein and genistein, are known to be responsible for the biological activities. High soy food consumption is being linked with lower risk of breast and prostate cancer and is believed to improve bone mineral density. Another area receiving much importance in the recent times is that of the probiotics and prebiotics and polyunsaturated fatty acids. PUFA are fatty acids that contain more than one double bond, which are separated from each other by a single methylene group. Diets rich in PUFAs have been shown to positively influence immune function, blood pressure, cholesterol and triglycerides levels, and cardiovascular function in animals and humans.

Nutraceuticals- The future

The dietary supplements and nutraceutical market is projected to achieve a global market size of about Rs. 90 billion in 2013 at a CAGR of 20.24%. The development of highly sophisticated and advanced analytical techniques in the area of nutraceutical development in past few years has led for the determination and quantification of various nutraceuticals. Many phytochemicals have created a lot of excitement among the researchers as well as



consumers in the past few years. Anthocyanins have been shown to increase the cognitive performance, reduce oxidative ischemic damage to brain and enhance the memory. Isoflavones (especially genistein) have also possible beneficial effects in the post-menopausal symptoms like osteoporosis and hot flushes. The emergence of the Human Genome Project and subsequent identification of single nucleotide polymorphisms (SNPs) within populations which has played a major role in predicting individual response to drugs i.e. pharmacogenetics has given birth to a new branch called Nutritional genomics. It includes; “Nutrigenomics”, which is the study of interaction of dietary components with the genome and the proteomic and metabolomic changes taking place as a result of that; and “Nutrigenetics”, which mainly deals with understanding the gene-based differences in response to the dietary components and using the data of individual genetic makeup to develop nutraceuticals that are most compatible with health. Nutrigenomics and nutrigenetics can change the way for a whole new era of the nutraceutical and dietary supplement market worldwide.

This is making the future of the nutraceutical industry very bright. The main concern in the coming years would be to safeguard the consumer through proper regulation of these products in

order to create a sustainable market for these products.

Conclusion:

“If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health”-

Nutrigenomics and
nutrigenetics can
change the way for a
whole new era of the
nutraceutical and dietary
supplement market
worldwide.

Hippocrates. These words said by the great scientist emphasize on the importance of the past, present and the future of nutraceuticals. Since ancient times people have been aware of the importance of the **“right amount of nutrition”** in maintaining a healthy lifestyle. Nutraceuticals and dietary supplements have played an important

role since the time of origin of the mankind. The increasing quest for the **“safest and the best way to health”** and the increasing awareness among the consumers about the potential benefits of the nutraceuticals, which are considered relatively safer alternative as compared to the allopathic medicines, has led to the growth of this industry worldwide.

The future of the nutraceutical industry is going to go brighter and brighter as many surveys have clearly predicted the immense growth of the nutraceutical market in the years to come. However the main concern would be on the regulative requirements, overall safety and efficacy of nutraceuticals.

The present knowledge about nutraceuticals is undoubtedly a biggest challenge for nutritionists, physicians, food technologists and food chemist's. Public health authorities are considering the prevention and treatment with nutraceuticals as a upcoming instrument for maintaining health and against nutritionally induced acute and chronic diseases, which would help in promoting optimal health and quality of life. An important place for nutraceuticals in clinical practice is emerging, but important pharmaceutical and clinical issues need to be addressed by further research. ●