

Review

Market potential for probiotic nutritional supplements in India

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Indian probiotic industry is evolving at a steady pace with conditions set for tremendous growth in near future. India being the largest producer of milk and having world's highest cattle population has a distinct advantage in the probiotic field along with its booming economy. Although there are quite a number of challenges in front of domestic and foreign companies entering the Indian probiotic market, the advantages associated with the industrial growth prospects outnumber the challenges in an easy and elegant way. Currently Indian probiotic industry is valued at \$2 million with a handful of players which is projected to hover around \$8-10 million in 3, 4 years. Brands that exist now in Indian probiotic industry are Nestle, Amul, Yakul Danone and Mother Dairy along with other minor players operating in different regions in their own capacities. The strong fundamental factors for the probiotic industry in India pave way for the flourishing of industry in the near future.

Keywords: Indian, tremendous growth, industrial growth, probiotic market, Nestle, Amul, Yakul Danone and Mother Dairy, producer of milk, highest cattle population, booming economy.

INTRODUCTION

'Let food be thy medicine and medicine be thy food', the age-old quote by Hippocrates, is certainly the tenet of today. With the growing interest in self-care and integrative medicine coupled with our health-embracing baby boomer population, recognition of the link between diet and health has never been stronger. As a result, the market for functional foods, or foods that promote health beyond providing basic nutrition, is flourishing. Within the functional foods, is the small but rapidly expanding arena of probiotics – live microbial food supplements that beneficially affect an individual by improving intestinal microbial balance. The first recorded probiotic was fermented milk for human consumption. After that, probiotics became popular with animal nutrition.

The role of fermented milk in human diet was known even in Vedic times. But, the scientific interest in this area boosted after the publication of the book entitled 'The

Prolongation of Life' by Ellie Metchinkoff in 1908. He suggested that people should consume fermented milk containing *Lactobacilli* to prolong their lives. Accelerated aging is because of auto-intoxication (chronic toxemia), which is due to the toxins produced by gut microflora. Bulgarian peasants who were subjected to the experiments on longevity had consumed large quantities of sour milk. The pathological reaction might be removed and life expectancy could be enhanced by implanting lactic acid bacteria from Bulgarian yogurt according to Metchinkoff et al. (1908). Since then, researchers started investigations relating to the role of lactic acid bacteria in human and animal health.

According to Pollman et al. (1980), probiotics have been used as growth promoters for lactose intolerance, anti-tumour and anti-cholesterol-lowering effects which were confirmed by subsequent studies by Garvie et al. (1984) and Gilliland et al. (1985). Probiotics have been extensively studied under *in vitro* and *in vivo* conditions by Manisha et al. (2001). The main fields of research with respect to probiotics are heart diseases, allergic reaction, cancer, diarrhea, etc. The use of probiotics resulting in

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Table 1. Commercially used probiotics *Lactobacilli* and *Bifidobacteria*.

Strain	Country	Company
<i>Lactobacillus rhamnosus GG</i>	Finland	Valio Dairy, Helsinki
<i>Lactobacillus johnsonii Lal</i>	Switzerland	Nestle, Lausanne
<i>Lactobacillus casei Shirota</i>	Japan	Yakult, Tokyo
<i>Lactobacillus acidophilus</i>	USA	Rhodia, Madison
<i>Lactobacillus casei DN 014001</i>	France	Danone
<i>Lactobacillus delbrueckii</i>	Japan	Meiji Milk Products, Tokyo
<i>Saccharomyces boulardii</i>	USA	Biocodex, Seattle
<i>Bifidobacterium longum BB536</i>	Japan	Morinaga Milk Industry

alleviation of lactose intolerance due to increased concentration of b-galactosidase in the small intestine, relief from constipation by increased bowel function (Rettiger 1921), anti-tumour activities due to inhibition of tumour cells, destruction of carcinogens, etc. have been well documented by Reddy et al. (1993) and Rowland et al. (1975). Intestinal infections caused by *Escherichia coli*, *Campylobacter fetus* subsp. *jejuni*, *Clostridium perfringens* and *Clostridium botulinum* were reduced in the presence of *Lactobacillus* supplements (Fueller, 1989). The *Lactobacillus* has shown promising results and *Bifidobacterium longum* has been successfully used to reduce the after-effects of antibiotic therapy according to Colombel (1987).

Composition of probiotics

Probiotics can be bacteria, moulds or yeast. But most probiotics are bacteria. Among bacteria, lactic acid bacteria are more popular. *Lactobacillus acidophilus*, *Lactobacillus casei*, *Lactobacillus lactis*, *Lactobacillus helveticus*, *Lactobacillus salivarius*, *Lactobacillus plantrum*, *Lactobacillus bulgaricus*, *Lactobacillus rhamnosus*, *Lactobacillus johnsonii*, *Lactobacillus reuteri*, *Lactobacillus fermentum*, *Lactobacillus del-brueckii*, *Streptococcus thermophilus*, *Enterococcus faecium*, *Enterococcus faecalis*, *Bifidobacterium bifidum*, *Bifidobacterium breve*, *B. longum* and *Saccharomyces boulardii* are commonly used bacterial probiotics (Table 1). A probiotic may be made out of a single bacterial strain or it may be a consortium as well. Probiotics can be in powder form, liquid form, gel, paste, granules or available in the form of capsules, sachets, etc.

PROBIOTIC FOOD MARKET IN INDUSTRIALIZED NATIONS

The most active area within the functional foods market in Europe has been probiotic dairy products, in particular, probiotic yogurts and milks. In 1997 these products accounted for 65% of the European functional foods market, valued at US \$889 million, followed by spreads,

valued at US \$320 million and accounting for 23% of the market according to Hilliam et al. (1998). In a recent study undertaken by Leatherhead Food RA, the market for functional foods in the United Kingdom, France, Germany, Spain, Belgium, Netherlands, Denmark, Finland, and Sweden was reviewed. The results of the study showed that the probiotic yogurt market in these 9 countries totaled >250 million kg in 1997 as per Hollingsworth et al. (1997), with France representing the largest market, having sales of ≈90 million kg, valued at US \$219 million. The German market for probiotic yogurts is growing rapidly; for example, during 1996–1997, it increased by 150%, whereas the UK market grew by a more modest 26% during the same period. On average, probiotic yogurts accounted for ≈10% of all yogurts sold in the 9 countries studied, with Denmark having the highest proportion (20%) of probiotic yogurts, followed by Germany and the United Kingdom (both at 13%) and then France (11%). Studies by Berner et al. (1998) showed that, on the lower end of the scale were the Netherlands and Belgium (both at 6%) and then Finland and Sweden (both at 5%). Seen as crucial to market expansion in Europe is further clarity on the use of health claims. The market for functional foods in Europe could ultimately account for ≈5% of total food expenditure in Europe, which, based on current prices, would equate to ≈US \$30 billion according to Young et al. (1996) and McNamara et al. (1997).

According to a new market research report, 'Probiotics Market' (2009-2014), published by Markets and Markets, the global probiotics market is expected to be worth \$32.6 billion by 2014, with the Europe and Asia accounting for nearly 42 and 30% of the total revenues respectively. The global market is expected to record a CAGR of 12.6% from 2009 to 2014. According to the report, Europe forms the largest market for probiotics with an estimated \$13.5 billion by 2014. Its 12.2% CAGR from 2009 to 2014 is driven by consumer demand for health-enhancing probiotic products, such as probiotic yogurts, other probiotic dairy products and probiotic dietary supplements. Asia is the second largest segment, growing at with an estimated CAGR of 11.2% to reach \$9.0 billion by 2014.

Probiotic dairy products are expected to command the

highest market share among all the probiotic foodstuffs, accounting for almost 70% in the year 2009 and reaching a market size of almost \$24 billion by the end of 2014. The biggest markets for these products are Europe and Asia; the U.S. market has slowly but surely opened up to these products in the recent past and is expected to grow at a CAGR of 17% from 2009 to 2014, the biggest contributor being probiotic cultured drinks followed by probiotic yogurts. Though the market base of probiotic products is comparatively lesser in the US, the market is expected to grow at an astounding rate of almost 14% in the same period driven by the large scale acceptance of - the probiotic yogurts in spoonable single serve packs, probiotic cultured drinks in single shot packaging form and probiotic dietary supplements.

The US functional foods market is comparatively under-developed by European standards, with fortified dairy products, particularly those containing active cultures, gaining popularity only recently. In contrast with the situation in Europe, there is a notable lack of development of prebiotics in the United States. Vitamin- and mineral-enriched products continue to be among the more successful functional foods in the United States. Market development has been held back by criticism leveled at companies that have introduced products bearing vociferous health claims. It is predicted that the US market for functional foods will experience the fastest growth rates compared with other countries in the future. An important aspect in this context will be the development, clarification, and testing of the laws relating to health claims. As is the case in Europe, the issue of health claims will be important for the future growth and expansion of the market for probiotics and functional foods in the United States.

INDIAN PROBIOTIC MARKET

Indian probiotic market is valued at \$2 million as per 2010 estimates and it is poised to quadruple by 2015 due to the advent of Indian and multinational companies coming in to the fray. With their advent, the Indian probiotic market turnover is expected to reach \$8 million by the year 2015. The existing probiotic market in India majorly comprises of three segments, urban chain, young adults and people with special needs such as pregnancy, lactation, immunodeficiency, geriatrics etc. India at present accounts for less than 1% of the total world market turnover in the probiotic industry and it is a huge deficit considering the fact that India has the highest cattle population and India being the world's highest milk producer.

Probiotics in India generally comes in two forms, milk and fermented milk products with the former occupying 62% of the market share and later having 38% market share (Indian consumer survey, 2010). Indian probiotic products currently are Dahi (Indian yoghurt), flavoured

milk and butter milk. Major pharmaceutical companies have become active in this space and are devising newer drugs and products, however current drugs are predominant in the area of nutraceuticals. Players are also devising packaged products like probiotic-based nutritional supplements aimed at people with special needs such as lactation, pregnancy, immunodeficiency etc.; another set of products are the over the counter (OTC) variety of probiotic formulations generally aimed at pediatric and geriatric patients.

CURRENT PLAYERS IN INDIAN PROBIOTIC MARKET

Yakult Danone

Yakult Danone India Pvt Ltd (YDIPL), is a 50:50 joint venture between Japan's Yakult Honsha and The French- Danone Group, with its offering Yakult, a probiotic drink made from fermented milk, *Lactobacillus* and some sugar. Yakult is a world leader in probiotic drinks and has a rich heritage dating back to 1935. Yakult was launched in India in the late 2007. The brand was initially available only in Delhi. Now Yakult is being launched nationally in a phased manner. Yakult is fermented milk that contains healthy bacteria *Lactobacillus casei* strain *Shirota*. According to the brand site, a 65-ml Yakult bottle contains 6.5 bn probiotic bacteria.

Yakult has been testing its marketing strategy for around a year and is now ready for the national roll out. The brand is currently available in Delhi, Mumbai, Chandigarh and Jaipur. The entry of Yakult is expected to increase the visibility and growth of probiotic category in India. What is interesting about Yakult brand is its marketing strategy. The brand has adopted a two prong strategy to crack the Indian market. Yakult has roped in actress Kajol as the brand ambassador. The brand is also making enough noise in the media. These advertisements are bound to increase the brand visibility and also may prompt consumer trials. The choice of the brand ambassador also gels with the target market. The brand predominately targets the health conscious ladies as the primary consumer. The brand has taken the positioning of a "health enhancer" and adopted the tagline "Daily Piyo, Healthy Jiyo" ("Drink daily, Win health"). The brand has the global tagline of "The kiss of good health". But a product like a probiotic drink may not be easily adopted by the consumer since she may have lot of doubts about the product. It is in this context that the brand adopted its strategy of direct marketing.

Yakult has a strategy of direct marketing where the consumers can order the product through home delivery. Yakult has a DM (Direct Marketing) team of ladies known as Yakult ladies who visit homes, educate the homemakers about the product and also regularly supplies the product. This ensures that the product is being regularly used by the consumers and also the Yakult ladies will

be able to answer the doubts of the consumers. Yakult is also available in supermarkets. Another interesting fact is about the pricing strategy of Yakult. The 65-ml bottle is priced at Rs 10 and the product is available in a pack of 5. The price sounds reasonable for those consumers who are health conscious. The main challenge for this product is to make the consumers believe that the product is delivering benefit to them. Most of the health foods have the problem of giving measurable visible results to the consumers. Yakult primarily targets those consumers who are health conscious and are aware of the importance of functional foods like probiotics. The brand will be initially operating in a niche category and its strategy will be to expand the niche category into a mainstream one. It has adopted the right marketing strategy to educate the consumers and also encourage them to make regular use of this product.

Amul

Amul was the first to foray into the category with its probiotic ice creams prolife in February 2007. Amul, on the other hand, having tasted success in the probiotics category with its ice cream in February earlier this year, is already in the process of test-marketing pouched lassi (sweetened curd) in Gujarat and some parts of Maharashtra, with plans of introducing it in the other parts of the country soon. Probiotic products contribute to 10% to its ice-cream sales and 25 per cent of its Dahi (Indian yoghurt) sales.

Nestle

Nestle, having recently declared dairy as its key area of growth, is all set to introduce probiotics in its other dairy products as well. The total packaged curd market in India is estimated at 40,000-60,000 tonnes per annum, of which Nestle has a 30 per cent market share. Internationally, the average contribution of probiotic products to total dairy products is estimated between 10 and 20 per cent depending on the country and business. Nestle also has introduced flavoured milk varieties of probiotic nature.

Mother Dairy

Mother Dairy – Delhi was set up in 1974 under the Operation Flood Programme, a wholly owned subsidiary of the National Dairy Development Board (NDDB), whose current chairman is Dr. Amrita Patel. Currently, it is one of the largest milk (liquid/unprocessed) plants in Asia selling more than 25 lakh liters of milk per day, thereby enjoying a market share of 66% of the branded milk sales in New Delhi, capital of India. Other important markets include Mumbai, Saurashtra and Hyderabad. Mother dairy ice-cream was launched in the year 1995 and has

shown continuous growth over the years, and today it boasts approximately 62% market share in Delhi and NCR. b-Activ Probiotic Dahi, b-Activ Probiotic Lassi, b-Activ Curd and Nutrifit (Strawberry and Mango) are the company's probiotic products. Probiotic products are contributing to 15% of the turnover of their fresh dairy products. Over the next 3-4 years, the contribution is expected to go up to 25% and the urban acceptance is making the company to increase their focus on probiotic products.

CURRENT STATUS OF PROBIOTICS IN INDIA

In India, probiotics are often used as animal feed supplements for cattle, poultry and piggery. This requirement is also met by importing probiotics from other countries. It is rarely used for human beings – Sporolac, *Saccharomyces boulardii* and yogurt (*L. bulgaricus* + *L. thermophilus*) are the most common ones. Sporolac is manufactured using *Sporolactobacilli*. Lactobacilli solution is an example of a probiotic, usually given to paediatric patients in India. The latest and recent addition to the list of probiotics in India is ViBact (which is made up of genetically modified *Bacillus mesentericus*), which acts as an alternate to B-complex capsules. In India, only sporulating *lactobacilli* are produced and they are sold with some of the antibiotic preparations.

India is a challenging market as it has not been exposed to probiotic products as have Western and other Asian countries. Countries like Japan, UK and some other countries in Asia have been part of the growing probiotic market since the early 1980s. But, in India, commercial probiotic foods only started cropping up on store shelves around 2007. Hence, it will be a while before we are able to overcome hurdles such as lack of awareness, retail mind set, lack of cold chain and such facilities. The global probiotic market today is \$17 billion, whereas the market size in India is just about Rs 100 crores with a handful of players. While probiotics in the form of drugs are widely accepted, probiotic foods are still viewed with scepticism. Acceptance is growing slowly, but it will be a long while before people start consuming bacteria for breakfast.

FACTORS FAVOURING INDIAN PROBIOTIC MARKET AND ITS PLAYERS

With India undergoing a rapid economic growth at a pace and with increasing number of Indian middle class population, there is a steady, increasing shift towards preventive therapies which did not exist before. People were spending only for post disease conditions out of compulsion. Increased money flow in the hands of Indian people is aimed at taking a paradigm shift towards preventive therapies in which probiotics play a prominent

role. Increase in disposable income of Indian population is another driving force which acts in favour of probiotic industry. Indian per capita income has risen to Rs.48,856 from Rs.22,792 in 1991 (Indian economic survey, 2010). When there is an increase in per capita income, it usually increases the dispensability of people's money in health benefiting sectors. Increasing shift towards self-medication is a factor which has a positive impact on Indian probiotic industry prospects. As probiotics are not purviewed under any health related law in India and with ICMR (Indian Council of Medical Research) still framing the guidelines for probiotic sales (ICMR status report on probiotics, 2009), probiotics face no hindrance from government health officials on its sales. Many elite and upper middle Indians view probiotics as self medication and their tendency to self medicate helps in the growth of Indian probiotic industry.

Increase in healthcare spending is an associated factor with increase in per capita income and ease of money dispensability. Increase in healthcare expenditure also creates the scenario for an inclusive growth in Indian probiotic market. Next important factor is the ageing population of India. It is estimated that in India, there will be an increase of 18% in the number of people in the above 60 years category by the end of this decade (Indian Bureau of Statistics, 2008). Ageing population with increased income at hand will have an ideal setting for Indian probiotic companies which produce and market specialized probiotic products meant for geriatric patients.

Pharma retail growth is the next factor touted to advance the probiotic market in India. Indian pharmaceutical industry is growing at a steadfast rate and is looking to diversify its products for catering domestic, foreign needs. Indian pharma industry is in compelling need to diversify due to the strict patent regime which came in to force on January 1, 2005. The loss in the generic drug business has to be compensated in functional food business in which probiotics is the major class of products. With retail growth in pharma field going at a brisk pace, the ease of access in case of probiotics will also grow along with it. Favorable pricing environment is also becoming possible due to number of Indian and global players entering the probiotic market. As the field is nascent, the pricing is extremely competitive taking into consideration the fact that every player in the market is trying to consolidate their consumer market base and build brand value. Any fluctuation in prices may turn away the first time consumers who are crucial for the sustained growth of the industry in a flourishing market like India where pricing plays an important role. These factors contribute to the competitive pricing which again is a factor working for Indian probiotic industry as a whole.

CHALLENGES TO BE CONSIDERED

Lack of standardization is a major challenge for the Indian probiotic industry. As the industry is in its initial

stage, there is not a proper standardization parameters present. This scenario will improve with the entry of more established players entering the Indian market and bringing standardization along with them. Lack of awareness from the lower middle class population in urban areas and rural masses may provide a rocky platform for the companies in their expansion plans. A sustained television advertisement campaign with prominent faces being roped in to promote the product may help to counter this challenge to the farthest extent since the same strategy has proved to be useful for other products which were in the same league before. Marketing and distribution challenges exist in a country like India which is very diverse and presents a topography which requires specific case studies and temperaments. Region specific marketing strategies with local sales team being involved in the decision making process will help the business cause. Involving defined strategies with positive outlook can make a difference as far as this challenge is concerned. Launching the products with Indian consumer interests in mind and forming a team of Indian sales experts by the companies will reduce this challenge in a very effective way.

CONCLUSION

Indian probiotic market presents a rosy picture in the near future. Although there are formidable challenges to be encountered, the prospects of the market expanding in a steadfast way look bright. If the companies can standardize the sales procedures, create the right kind of awareness among the Indian population especially urban lower middle class and rural masses with interwoven delivery strategies, Indian probiotic market players can surely up the ante and end up with a winning proposition. The fundamental factors like uninterrupted supply of raw materials, qualified man power, congenial investment climate with proactive government support are in place paving the way for the probiotic industry to make giant strides in Indian market. Excellent growth opportunities exist for domestic and foreign companies to capitalize the prevailing situation and produce resounding results.

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