COMPETITIVENESS OF INDIAN PHARMACEUTICAL INDUSTRY– AREAS NEEDING ATTENTION

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ABSTRACT

Indian Pharmaceutical Industry is one of vibrant and competent industry in global arena. Presently, Indian pharmaceutical industry offers great variety of life solutions to its domestic and global customers. It is attracting global Pharmaceutical industry attention as destination for its knowledge solutions in terms Clinical trials, contract manufacturing and R&D. However, Indian enjoys very little share in global market and promises to grow at rapid pace provided ,if, researchers, industrialist, consultants, and government join hands together to address the all compelling current, and future issues and challenges.
Myriad issues are involved in survival, growth and development of Drug and Pharmaceutical sector. It cannot be treated on par with other industries for simple reason that, Pharmaceutical industry is dealing with Human being and their physical and psychological ailments. Due this reason Pharmaceutical industry has social responsibility more than commercial responsibility.
Drug and Pharmaceutical Industry has to address several issues viz. environmental issues, Intellectual Property Rights, Increasing Foreign players' presence in Domestic market, providing Medicines at affordable Price with adequate quality. It has to satisfy all the necessary legal and ethical standards. In addition to that, for being a competent player in volatile environment, Pharmaceutical company requires to focus their attention on constant Research and Development, Support from the government..

Keywords*: Indian Pharmaceutical Industry, SWAT analysis, Patents, and Clinical Trials.*

Introduction:

Due to compelling reasons in 1991 year the then Government of India (GOI) under the prime minister ship of Sri PV Narsimha Rao, and Dr.Manmohan Singh the then Finance Minister has initiated liberalisation of industry from the licence permit raj.
Since then, Indian industry has showed tremendous growth. Indian pharmaceutical sector is no exception to that. Albeit, there are many accusation on this sector for not being innovative and good at copying through *reverse re-engineering* the patented product. Till 2005 GOI has only honoured process patent not product patent, most of the Indian companies took advantage of this policy and adopted reverse re-engineering strategy and released branded product on their name. This strategy will no longer help Indian pharmaceutical players. Since, India is signatory to WTO and it has to follow and honour Intellectual Property Right (IPR). In addition to that Post 2005 they can't be complacent. Now rules of the game have changed, today every player has to honour both product and process patent.

Review of Literature:

Many researchers were hopeful and ambitious about Indian pharma industrial growth. Following are excerpts from various studies:

a) Wendt, (2000), found that 'during the past three and a half decades, most of the large private Indian pharmaceutical firms focused on Reverse Re-Engineering and further their activities were limited to applying known knowledge, or to making small adjustments in the contents, hence, they could release new drugs in to the market effortlessly'.
b) Agrawal, Thakkar (1997) examined the strategies adopted by different companies to survive the phase of patent expiration. The authors suggest that the companies should not increase the prices when the patent is about to expire, rather if the marketing strategies are well planned the costs involved in

product development can be recovered even after the expiry of the patent. Companies need to have a combination of product modification, promotional and pricing strategies to save a company from losing market share on a patent expired product.

c) Lanjouw (1998) has analysed how the introduction of product patents for pharmaceuticals may benefit or adversely affect India. Although the study does not arrive at a conclusive answer to whether the introduction of Pharmaceutical product patents in India will bring about heartless exploitation of the poor and suffering, still it does provide some suggestions about the way events might unfold as the policy is implemented.

d) Fink (2000) has examined the impact of patent protection on the behavior of pharmaceutical Trans-National Corporations (TNC's) and market structure in India. This research study simulates the effects of introducing patent protection for pharmaceutical products on market structure and static consumer welfare. The simulations reveal, of what extent price increase, profits and static welfare losses depend on the values of assumed elasticity. The study reveals that if, future drug discoveries are mainly new varieties of already existing therapeutic treatments, then impact is likely to be relatively small. If, newly discovered drugs are medicinal breakthroughs, in such case prices may be significantly above competitive levels and static welfare losses relatively large.

e) Abhinav Agrawal., Kamal Dua, Vaibhav.Garg, U.V.S. Sara and Akash Taneja (2000), In their study titled "Challenges and Opportunities for the Indian Pharmaceutical Industry" they have attempted and reviewed the status of Indian pharmaceutical industry vis-à-vis global pharmaceutical industry. The probable opportunities and challenges for the Indian Pharmaceutical Industry in the post 2005 era have also been discussed.

f) Watal (2000) has examined the effect of the introduction of pharmaceutical patents on prices and welfare losses in India. The study also points out that there are several measures available for reducing welfare losses permissible under TRIPS.

g) Mckinsey &company (2009) estimate total industry size is $20 billion and $11.8 Billion is domestic market and rest $8.2 Billion is export market. However, currently Indian has mere 2-2.5 percent of global market sale. Many global companies likely to increase outsourcing of manufacturing by30%, reduction of manufacturing facilities by half by 2010, completely exit production of API manufacturing in next 5 years.

Need For The Current Study:

India has geographical diversity along with dynamic cultural, ethical and linguistic diversity. Despite that its pharmaceutical industry is in poor state. Statistics revel that Indian pharmaceutical companies are able to satisfy 70 percent of domestic requirements. Since, pharma industry's survival, growth and development are directly related to the medical and health facilities available in India . Even today 65-70 percent of the population has no access to the basic facilities. Percapita spending also very less in comparesion with regulated markets. Indian medical and health facilities are inadequate when compared to the foreign regulated developed markets. However, this paper will try to elicit all the tangible and intangibilities of Pharmaceutical sector which directly and indirectly influence the survival, growth and sustainability of Indian Pharmaceutical Industry.

Prier to 2005, Indian companies were not investing heavily on R&D, but they have mastered the art of manufacturing process. It means, when they cannot invent or discover drugs, they adopted process innovation. Now that process innovation will be our core competency, IPI can grow multi-dimentionally. Hence this study will focus on how to improve Indian pharmaceutical industry's competitiveness in post 2005 era.

Objectives of The Study:

a) To understand the current status of the Indian Pharmaceutical Industry

b) To analyse the Strengths, weaknesses, opportunities and threats of Indian Pharma industry.

c) To conceptualise How Indian Pharma industry has emerged as competent player

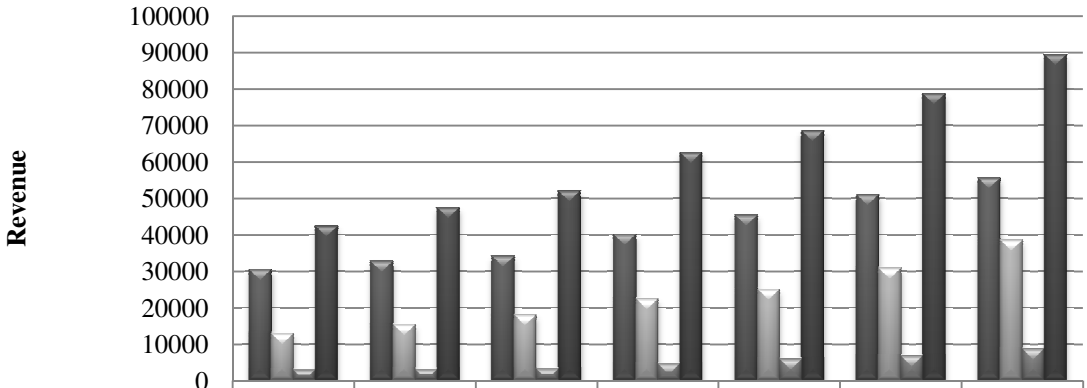
d) To identify Areas needing attention pertaining to Indian Pharma Industry.

Emergence of Indian As Competent Pharma Player:

It is believed that 'A rough sea makes the tough captain'. Indian pharmaceutical industry has shouldered the gigantic task of addressing people's medical problem and came up to the expectations when situation demanded. From time to time, Major players have adopted required strategies contingent upon the situation and policy.

The Indian pharmaceutical industry, which had little technological capabilities to manufacture modern drugs locally in the 1950s, has emerged technologically as the most dynamic manufacturing segment in the Indian economy in the 1990s (Kumar and Pradhan 2003). It achieved a significant scale and level of technological capability for manufacturing modern drugs indigenously and cost-efficiently to emerge as a major developing country competitor in the world market. It indigenously meets up to 70 per cent of the domestic requirement of bulk drugs and almost all the demands for formulations, thus, restricting imports from developed countries into India. Besides, it generates rising trade surpluses in pharmaceutical products by exporting to over 220 countries, therefore, significantly competing with developed countries for global market share. It produces life-saving drugs belonging to all major therapeutic groups at a fraction of prices existing in the world market and thus, has been seen as ensuring health security of the

Figure 1: Domestic And Export Market



	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Domestic Market	30365	32575	34128	39989	45367	50946	55454
Exports	12826	15213	17857	22216	24942	30760	38433
Imports	2865	2956	3139	4515	5867	6734	8552
Total	42326	47332	52029	62566	68442	78610	89335

poorer countries. The Annual Report 2009-10 of the Department of Chemicals, petrochemicals and Pharmaceuticals, Government of India, describes it as one of the largest and most advanced among developing countries. The industry today possesses the largest number of US Food & Drug Administration (FDA) approved manufacturing facilities outside the US and has filed 126 Drug Master Files (DMFs) with the US FDA for drug exports to the US, which is higher than that filed by Spain, Italy, China and Israel taken together.

The phenomenal progress made by the industry over the last three decades has instilled a strong belief in the government and in pharmaceutical companies in India that the country has a competitive strength and it should be enhanced by suitable policy measures and firm-specific actions with regard to export, innovation, strategic alliances and investment. The Pharmaceutical Policy 2002 echoes the same sentiment and has shifted the focus of the policy from self-reliance in drugs manufacturing to the objective of enhancing global competitiveness.

Current Status:

The Indian pharmaceutical industry, now a $20 billion (over Rs 85000 crore) Industry, has shown tremendous progress in terms of infrastructure development, technology base creation and a wide range of therapeutic drugs. The industry now produces bulk drugs formulations in various dosages in GMP complaint facilities. Strong scientific and technical manpower and pioneering work done in process development have made this possible. India now ranks 3rd in worldwide production accounting for 8% of world's production by volume and 2% by value. It ranks 17th in terms of export value of bulk actives and dosage forms. Indian exports are destined to more than 200 countries around the globe including highly regulated markets of US, Europe, Japan and Australia.

Growing Domestic And Export Markets:

The above figure 1 explains the phenomenon how The Indian pharma industry has grown from a mere $ 0.3 billion turnover in its formative years to $21.3 billion in 2009-10. Indian now ranks 3rd in the world in production of drugs and pharmaceutical with 10% of global share and 14th largest in value terms. The department of pharmaceuticals, government of India reported the growth trends of Indian Pharma sectors during 2002-2009.

The pharmaceutical exports from India(see table1) have peaked beyond Rs.38000 crore in 2008-09 despite a slowdown in global economy. A growth rate of 29% was achieved over the corresponding period of the previous year. Indian pharma companies export to more than 220 countries including USA, EU, South Africa, Brazil, and Canada. Indian enjoys 1.2 % share in global market.

Out of total market size Indian earns more than 60 percent from exports. With remaining 40 percent it is able to meet 70 percent of domestic market requirements. The Indian pharma industry has recently achieved some historic milestones in developing cost effective AIDS drugs, FDS approval for antiretroviral, anti-invectives and cardiovascular, largest number of US-FED, MHRS (UK), TGA (South Africa), Health (Canada) approved generic manufacturing facilities and ANDA approvals in USA in specialized segments like anti infective and CNS groups. The Pharma Export Council (Pharmaexil) of Indian has been playing a key role in providing export thrust to new products, including bio-products, diagnostics, and herbal medicines, organisaing buyer-seller meets and maintaining reliable data base on pharma exports.

Table1: Indian Pharma Exports For The Year 2008-09

S.No	Importing Country	2008-09 (Figure In Rs. Crore)
1	USA	7103.27
2	Russia	1519.20
3	Germany	1441.87
4	Austri	1417.15
5	UK	1233.09
6	South Africa	1126.75
7	Canada	1090.43
8	Brazil	1018.89
9	Nigeria	1001.74
10	Ukraine	687.22
11	Israel	686.22
12	Netherlands	669.98
13	Spain	620.02
14	Turkey	614.20
15	China	561.53
16	Kenya	543.86
17	Vietnam	536.62
18	Belgium	520.90
19	Italy	57.85
20	Mexico	501.54

Source: Directorate General of Commercial Intelligence And Statistics (DGCIS) Kolkata

Table 2: SWOT analysis of Indian Pharmaceutical Industry

Strengths	Weaknesses
1. Low cost of Production 2. Increased number of US-FDA approved manufacturing facilities. 3. Competent and cheap Human Resource Professionals 4. World class research infrastructure 5. Conducive , diverse environment to conduct clinical trials like rich genetic base for testing molecules	1. Low investment in R&D, 2. Lack of financial strength of firms to carry out complete basic research 3. Highly fragmentation of market, thus leading to administrative and regulation difficulties and lack of economies of scale. 4. Inadequate regularity mechanism for conducting clinical trials. 5. Poor health care facilities acting as supply chain constraint. 6. Low per-capita income and low per capita expenditure (4%of income), acting as demand constraints. 7. Insufficient environment protection efforts.
Opportunities	**Threats**
1. Huge global market worth $700bn (app) 2. By 2015 40% of formulations will go off-patent. 3. Customer chemical synthesis (CCS) - contract manufacturing a, contract research and custom synthesis. 4. Integration of Pharmaceutical industry with bio-technology and AYUSH resulting in opening up of larger and more lucrative avenues.	1. Aggressive entry of MNCs, with financial muscle, who can heavily invest in R&D, Marketing and distribution. 2. Reduced tariffs result into dumping of drugs by other countries. 3. Inadequate focus on Safety, Health and Environment requirements. 4. Forced Acquisition of Indian Firms

Competitive Advantage of Indian Pharma Industry:

Versatility of Indian pharma sector is evident from the fact the pharma industry product produced fall under 21 major therapeutic classes with antibiotic constituting more than 50% of total production . Analgesics and antipyretics account for 18% and anti-dysentery and vitamins constitute around 6%. Indian companies leveraging their capabilities in organic synthesis, process engineering and commercially viable manufacturing technologies to produce new range of bulk drugs which have become off patent recently. They are partially successful in developing cost effective technologies for bulk drug inter-mediatories and bulk actives through their own R&D efforts or through collaboration with other R&D institution.

SWOT Analysis of Indian Pharma Industry:

The following attributes constitute the basis of the strengths, weaknesses, opportunities and threats of the Indian Pharmaceutical Industry:

Trends Indian Pharma Sector:

Indian Pharma industry is highly fragmented and diversifies. There around 20000 small, medium and big domestic and foreign players are present India. Out of which top ten firms constitute 45% percent of the market share. Another trend that is taking place recently in India is contract manufacturing and research, and Clinical Trials(CMR&CT). Since 2005 this segment is gaining momentum and promises to be next big wave in Indian pharma industry. It promises to $2 billion industry by 2015.

Role of The Government:

As custodian of people's health and welfare government has a major role to play in upbringing the industry. Such initiative was announced by GOI in its *Pharmaceutical Policy -2002*. Highlights of the policy include several incentives for innovative solutions and new drug discovery are "abolition of industrial licensing for all bulk drugs, permission of foreign technology agreements for all bulk drugs cleared by DGCI and their international formulations, constitution of Pharmaceutical R&D support Fund (PRDSF) and Drug Development Promotion Board (DDPB). This policy has a surprise incentive for innovation i.e. 15 years exemption for price control of those drugs developed through Indian R&D, and setting up of National Institute Pharmaceutical Education and Research (NIPER)s in several Indian pharmaceutical industry clusters to encourage R&D in Industries.

A separate department was created by the Government for special attention and growth of Indian Drugs and Pharmaceutical Industry. This initiative by the government sent a positive message to all the stakeholder industrialist, scientists, global players, and consumers.

Legal and Regulatory Framework for Indian Drug and Pharma Industry:

The legal and regulatory framework is vital for the effective management of drugs and pharmaceutical sector in any country. Indian has a robust legal and regulatory mechanism in operations. There is a strong need to sharpen their implementation on the ground level as well as improving the regulatory driven infrastructural facilities for making a deeper impact at global level. *Figure 2* below provides an overview of these frame works in Indian and their adequacy to address the environment and public safety problems of Indian drug and pharma sector. Though, many of the indicated instruments are common for various categories of chemicals, there are specific regulatory instruments applicable to drugs and pharmaceutical industry. Drugs and Cosmetics Act (1940) of the ministry of Health and Family Welfare of the GOI is one among them. It regulates import, manufacture, distribution and sale of drugs. The Good Manufacturing Practices (GMP) and Good Clinical Practices (GCP), US-FDA regulations and OECD guidelines for testing of chemicals on animals are important for drugs and Pharma sector.

Research And Development Funding, And Product Patenting:

Indian Pharma industry was not a good spender on R&D. in comparison with their foreign counter parts Indian firms invest 1.5 % of sales where as MNCs spend 15% of their sales on R&D. Now this trend is changing, Indian companies have spent around Rs 4917 crores during 2005-2009. However it was observed that many drug molecules' patent expired during 2005-2010. It brought a great opportunity to Indian Pharma; it saved their money and effort. Now, they can simply copy and release on different brand name in the market. US$150bn (Rs700,000cr) worth of drugs going off patent within a period of next 5 years with an average of US$48bn per year. Since most of the drugs produced by Indian companies are generic in nature this expiry brings them an opportunity to spend

Figure 2: Regulations Governing Indian Pharmaceuitical Industry

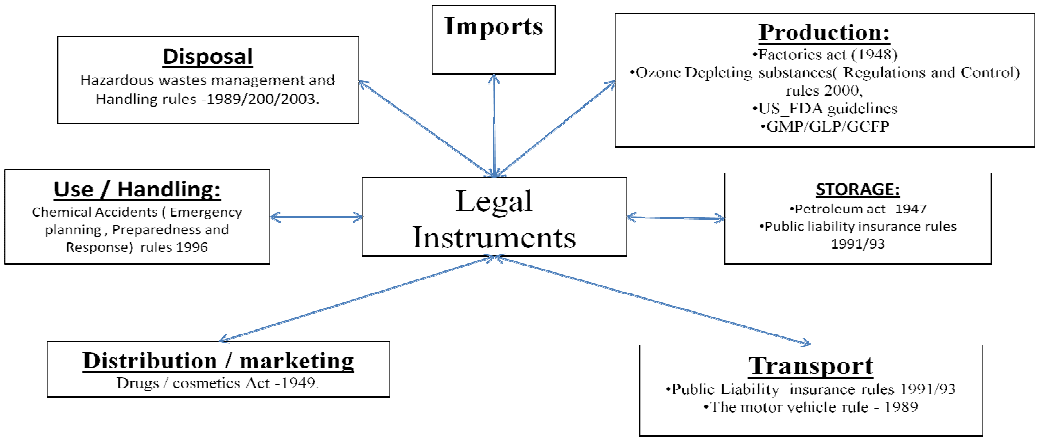


Fig 3: Block Buster Drugs Going Off-Patent Between 2010-15

Drug	Parent Company	Illness	Patent Expiry	Sales 2001 (Us$Mn)	%	Sales 2007 (Us$Mn)
Advair Diskun	Glaxosmithkline PLC	Asthma	12-Aug-08	7792	17.54	7663
Lipitor	Pfizer	Carotid Artery Diseases	24-Mar-10	11434	22.86	12401
Actos	Taked Pharmaceutical	Gestational Diabetes	17-Jan-11	4354	28.33	3479
Zyprexa	Eli Lilly And Co	Vascular Dementia, AIDS	13-Oct-11	4916	22.51	4696
Plaviz	Bristol-Myers Squbb Co	Hepatic Veni Thrombosis	17-Nov-11	6146	32.68	5603
Seroquel	Astrazeneca Plc	Vascular Dementia, AIDS	16-Mar-12	4866	14.83	4452
Diovan Hct	Novartis AG	Portal Hypertension, Pulmona	21-Sep-12	6013	13.58	5740
Nexium	Astrazeneca Plc	Gastroesophageal Reflux	27-Nov-14	4959	15.12	5200
Glivec	Novartis AG	Acute Lymphocytic Leukemia	4-Jul-15	3944	8.91	3670
Crestor	Astrazeneca Plc	Hyperriglyceridemia	8-Jul-15	4502	13.72	3597
Humire	Abbott Laboratories	Rheumatoid Arthritis	8-Jul-16	5488	17.84	4521
Remicade	Johnson & Johnson	Crohn Diseases	N/A	4304	6.95	3748
Lansoprazole	Takeda Pharmaceutical Co Ltd	Barrett Esophagus, Helicobacter	N/A	3418	22.24	1306
Enbrel	Amgen Inc	Psoriatic Arthritis	N/A	3493	23.86	3598
Total Marketability Opportunity				**75629**	**9**	**69674**

(Source : Bloomberg, BP Equities Institutional Research)

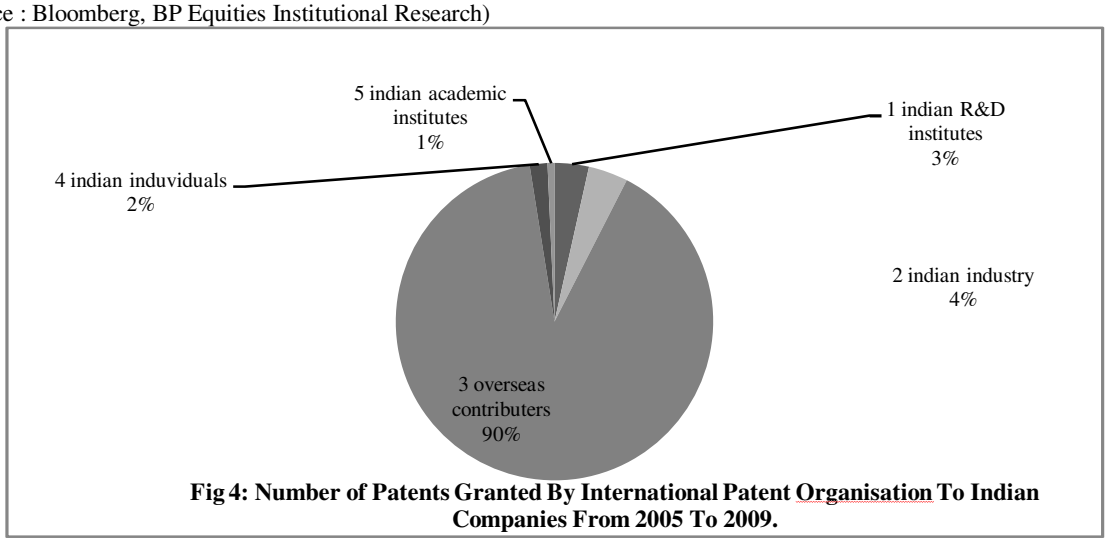


Fig 4: Number of Patents Granted By International Patent Organisation To Indian Companies From 2005 To 2009.

Table 4: patents filed by Indian organizations

Year	No. of patents
2005	3
2006	270
2007	772
2008	1369
2009	1046

Table 5: R&D intensity(R&DI) of Indian Drug and Pharmaceutical Industry

Year	KI	SC	BC
1998-1999	3.1	1	.1
1999-2000	2.5	1	.2
2000-2001	3.7	.9	.3
2001-2002	3.8	1.1	.1
2002-2003	4	1	.2
2003-2004	4.1	1.1	.3
2004-2005	3.2	1.1	.2
2005-2006	4.1	1.2	.2
2006-2007	4.6	1.1	.2
2007-2008	4.7	2.2	.3
2008-2009	4.9	1.1	.3
R&DI of Knowledge Intensive (KI), Specialty Chemical (SC) and Basic Chemical (BC) segment of Indian Chemical industry.			

Table 5: R&D intensity(R&DI) of Indian Drug and Pharmaceutical Industry:

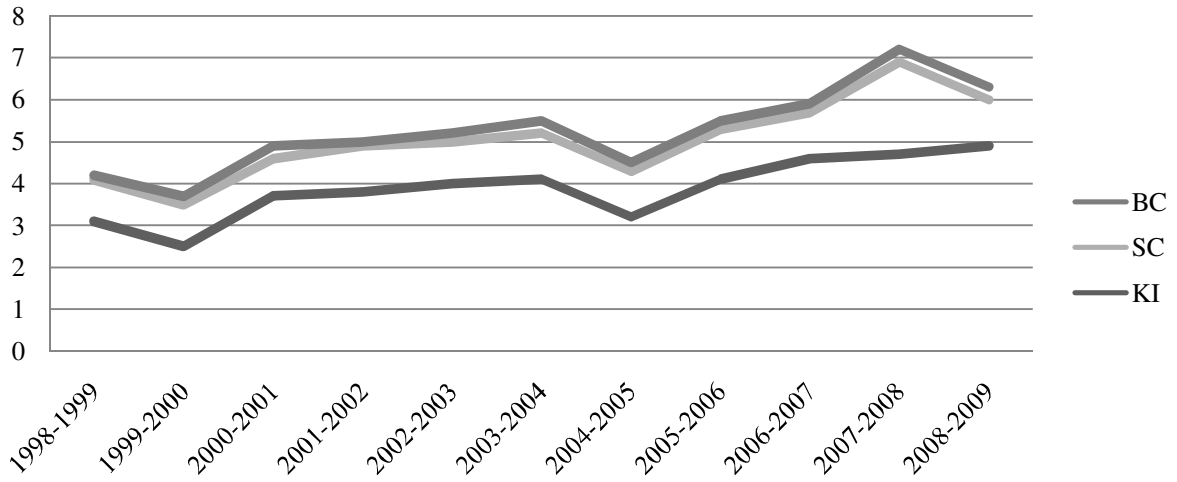


Table 6: Global comparison of R&DI of Pharmaceutical sector

India	Europe	USA	Japan
4.5	15.7	16.7	15.9

Table 7: Global Comparison of R&DI of Pharmaceutical Sector

India	Europe	USA	Japan
4.5	15.7	16.7	15.9

Table7: R&DI growth of Indian Knowledge Intensive Companies (1998-2008)

Turnover Range Rs. Crores	Average Turnover Rs. Crores		Average R&DI (%)	
	1998-99	2007-08	1998-99	2007-08
100-200	126	1140	6.5	4.8
200-500	366	1245	3.2	3.9
500-1000	760	3030	2.7	5.6

time, effort and money on generic research. Following is the list of block buster drugs going off-patent between 2010-15.

Government support to pharmaceutical R & D:

The Department of science and technology (DST), government of India has been strongly supporting Pharma

research. They have emphasized it in 10th and 11th five year plans. New national facilities in the fields of regulatory toxicology, proteomics, pharmacokinetic evaluation and levels 3 and 4 bio-safety have been created. in all 82 projects have been supported in 10th five year plan including collaborative R&D institution like NCL, IICT, And CDRI and leading drug companies like Lupin, Bharat serum, Biological –evens, Natural Remedies, Sudershan Biotech etc.fro diseases like AIDS,TB, Diabetes, Lucoderma etc…

New Discovery Research and Development:

No other industry segment in Indian is endowed with as much innovative R&D capabilities as drugs and pharma sector is. The drug discovery research has attracted many companies in the areas on infections, diabetes, inflammation, respiratory disorders, obesity and cancer. A number of pharma companies from developed nations have established collaborations with their Indian counter parts in drug discovery research. Some Indian companies have obtained US-FDA approvals for their new molecular as innovative New Drugs (INDs). Several MNCs are establishing their independent R&D centers in India.

Several global clinical Research Organisation have made India as their research hub for their research in potential disease areas like malaria, obesity, cancer, diabetes and infective for Phase –II clinical trials. Consequent to the Indian patent act amendment in 2005, the product patent regime has been ushered into Indian in line with its obligations under WTO-TRIPS. It has opened up new opportunities for Indian pharme sector to be globally innovative. The granting of product patents by the Indian patent office has formally started in 2005 and registered a steady growth till 2008. The pharma sector accounts for 42.24% of the product patents, the highest recorded in Indian for any S&T disciplines. Around 90% of pharma sector patents in Indian are from overseas inventors from industry's and R&D / academic institutions. Indian industry share is around 4 % with contributions from some of the major pharma companies.

R&DI Growth of Indian Knowledge Intensive Companies (1998-2008):

The R&D Intensity(R&DI) is defined as R&D expenditure as a share of industry output viz. sales realization. It indicates the strengths and weaknesses of various industrial sectors if they are examined relatively. It also indicate the R&D impact on quality and quantity of exports and imports and trade balance, ability to attract foreign investment (FDI) for technology oriented activities and infrastructure, effect on company size and age and the technological status of a particular industrial sector.

The table-7 shows the R&DI of three important segments viz. Basic, Specialty and Knowledge Intensive chemicals of industry. The highest R&DI of pharma sector in India, Europe, USA and Japan. It shows the necessity for Indian drugs and pharma industry to further enhance its R&D expenditure in order to catch up with developed nations. The relatively cheaper human resource and infrastructural development costs in Indian will provide much higher level of R&D realization per unit production cost for a given value of R&DI.

It is also interesting to note that the R&DI growth (see Table 7) of top Indian drugs and dominated Knowledge intensive companies. The presented data indicates the maximum growth in turn over registered by the Indian companies in Rs.100-200 crores range during 199802008 but its inability to invest proportionally in R&D. on the other hand, the companies in Rs. 500-Rs.1000 crores turnover, even though their turnover growth is not as impressive as those companies Rs 100-200 crores range, have been able to nearly double their R&DI during 1998-2008. The performance of companies in the turnover range of Rs.200-500 crores is intermediate between the above companies. The above data also shows the tremendous opportunities available for Indian companies in drugs and pharma sector to invest much higher than the present level to derive full benefits of their improved financial performance.

Investments In The Pharmaceuticals Sector:

The Pharmaceuticals sector has been able to attract FDI amounting to Rs.21409 million during the period from April, 2007 to April, 2009 including Rs. 43.42 million in the first month of the year2010. Out of 36 countries which contributed to FDI in India, 5 countries, led by Mauritius (56.36%), Singapore (11.18%), USA (5.81%), UAE(4.73%) and Canada(4.00%), Accounted for over 82% of FDI in Drugs & Pharmaceuticals There were 208 foreign collaborators during the period April, 2007 to April, 2009 in so far as Drugs & Pharmaceuticals are concerned. Of these, top 10 foreign collaborators contributed 48.70% of FDI. Further, out of top 10 collaborators, 7 were from Mauritius and one each from Singapore, UAE and USA. It is observed that between 2001-2010 Indian Pharma industries has been able to attract $1.4 billion FDI.

Future Challenges:

The technology transfer mechanisms being employed by the Indian drugs and pharma industry are scientifically weak and need to be restructured. The current fiscal incentives and tax concession etc. available for R&D are no longer attractive in the context of WTO and economic liberalization policies adopted at global level. The FDI policies also need to be addressed and reformed to attract sizeable overseas funds for technology and knowledge transfers and capability building in specialized areas, and transfer of new knowledge from R&D / Academic institutions to the industry. Indian Industry has to reach to the global scale it has to address all the critical issues mentioned in the side bar.

Conclusions:

Being most populated country Indian offers better market opportunities for the domestic and foreign Pharma companies. In fact it is believed that if Indian market can be tapped it will be one of the top 5 pharma market both in terms of value and volume. During interaction with Mr. K.V.Ranga Rao, Executive Director , Bulk Drug Manufacturers Association (India), Hyderabad. Several issues he has mentioned about the bulk drug industry which need to be addressed by the government and industry jointly. Based on this conversation following areas were identified as areas needing attention. For this purpose government needs to act in following way:

1. Abolish Administrative Price mechanism through Drug Price Control Order: such act will create market completion and result in to price reduction
2. Improvement of Health and medical facilities: government has to improve the access to better medical and health facilities to its people.
3. Increase investment in Research and Development on New Chemical Entity. Since R&D is capital intensive government can encourage it through Public Private Partnership (PPP) model.
4. Create awareness among patients, doctors, and regulators regarding drugs and it therapeutic values.
5. Reduction of sales tax, encourage investment in R&D at less interest rates.

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