Pharmaceuticals

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Pharmaceuticals

MARKET & OPPORTUNITIES

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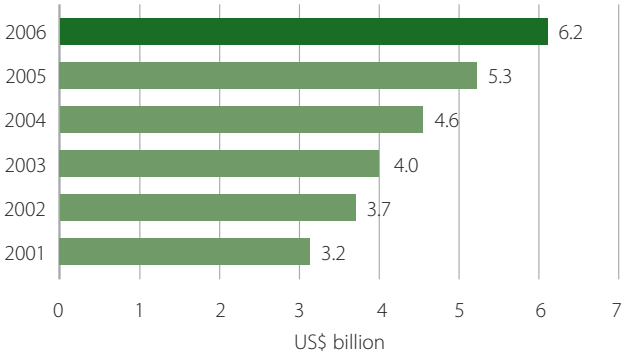
A report by Ernst & Young for IBEF

Market Overview

INDIAN PHARMACEUTICAL MARKET – US$ 7.3 BILLION OPPORTUNITY

India is among the fastest growing pharmaceutical markets in the world. The domestic pharmaceutical market recorded sales of US$ 7.3 billion in 2006 with a growth of 17.5 per cent over the previous year. Of this, retail sales were US$ 6.2 billion, while institutional sales were estimated to be around US$ 1.2 billion.

Domestic Pharma Retail Market

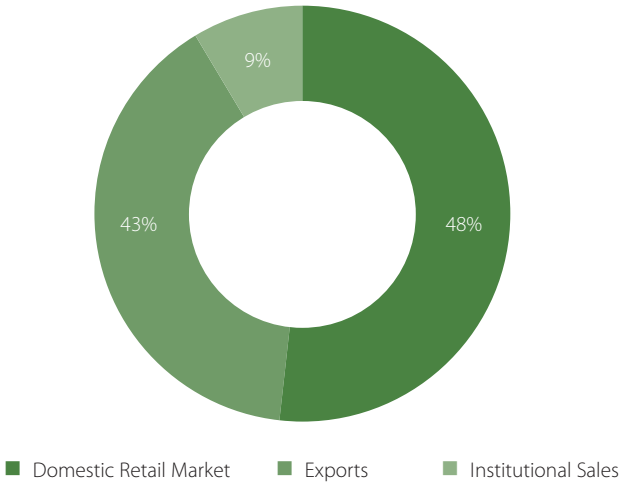


Source: US Census Bureau, EIU & World Trade Atlas

The Indian pharmaceutical industry was estimated to be around US$ 13.2 billion in 2006-07. Of this, domestic consumption of pharmaceuticals accounted for nearly 57 per cent while the rest 43 per cent was constituted by exports. The domestic market has grown at a composite CAGR of 9.5 per cent over the past five years. However, in 2006, the market witnessed an accelerated growth of more than 17 per cent, primarily on account of increased clarity on tax reforms especially the Value Added Tax (VAT) implementation.

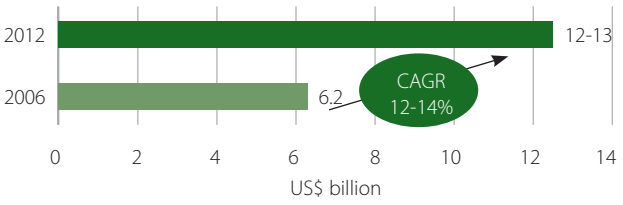
In the long run, the market is expected to maintain a healthy growth rate of 12-13 per cent. It is expected to cross US$ 10 billion mark by 2010 and would reach US$ 12 to 13 billion approximately, by 2012.

Break-up of Sales-Indian Pharma Industry



Source: IPA, E&Y analysis

Forecasted Indian Pharmaceutical Market



Source: Compiled From Industry Sources

ANTI INFECTIVES - LARGEST THERAPEUTIC CATEGORY

Anti-infectives is the highest revenue earning segment with a contribution of 18 per cent to the total domestic sales in 2005-06. Gastro intestinal (GI) and cardiovascular are the 2nd and 3rd largest therapeutic categories, respectively.

Cephalosporins, penicillins and quinolones are key drug classes among anti-infectives, with a share of around 78 per cent of the country's anti-infectives market.

Market Share of Key Therapeutic Categories (December 2006)	
Anti-Infectives	18%
Gastro Intestinal	11%
Cardiovascular	10%
Respiratory	9%
Vitamins/Minerals	9%
Analgesics	9%
Gynae	5%
CNS	5%
Dermatology	5%
Anti-diabetic	4%
Others	13%

Source: CRIS INFAC, E&Y Analysis

Alimentary and metabolism constituted around 25 per cent of the domestic formulation market in 2005-06 and grew by 10.7 per cent between 2003-04 and 2005-06. Oral anti-diabetics and anti-peptic ulcerants are the fastest growing segments in this category.

KEY DRUG CLASSES

Oral Anti-diabetics

It has been one of the fastest growing drug classes in the past five years. The segment has tremendous growth potential given the fact that the number of diabetics in India is expected to go up by 57.2 million by 2025 from the present 37 million. The market for Oral Anti-diabetics was estimated around US$ 173 million and has been growing at a CAGR of nearly 14 per cent.

Market Share of Key Drug Classes (2005-06)	
Cephalosporins	7.4%
Anti-rheumatic non-steriodal	4.7%
Anti-ulcerant	3.6%
Cough preparations	3.6%
Ampicillin/Amoxycillin	3.3%
Quinolones	3.2%
Oral anti-diabetic	3.2%
Haematinics	2.2%
Anti-epileptics	2.0%
Vitamin B Complex	1.7%
Others	65%

Source: CRIS INFAC, E&Y Analysis

Anti-ulcerants

The market for anti-ulcerants was around US$ 195 million in 2005-06, growing at a CAGR of 13.8 per cent. It constitutes 14.5 per cent of the alimentary and metabolism therapeutic category. Prevalence of ulcers is very high in India as 4-10 per 1000 people are estimated to be affected by it. H2 receptor blocker and proton pump inhibitors are the key drugs in this class.

Respiratory System: Anti Asthmatics

Respiratory segment constitutes 9.4 per cent of the total formulation revenue. The market of anti-asthma drugs was estimated around US$ 140 million in 2005-06.

Cardiovascular System (CVS)

Cholesterol Reducers and blood pressure lowering drugs are key drug classes under CVS. Beta Blockers accounted for 10.7 per cent of the total revenue generated by CVS in 2005-06. Calcium channel blockers further constituted 10.7 per cent of the total CVS segment in 2005-06.

ACE Inhibitors account for around 9 per cent of the CVS market. While angiotensin II receptor blockers constitute 5 per cent of the CVS sales.

Cholesterol reducers has emerged as a key class of CVS drugs over the past few years. In 2005-06, it accounted for 12.5 per cent of the total cardiovascular market. Statins has emerged as the most important family of drugs in cholesterol and triglycerides reducers.

Central Nervous System: Anti-depressants

Anti-depressants accounted for 17 per cent of the total revenues of the CNS segment in 2005-06. The immense potential of this class of drugs in India can be gauged by the fact that one in every 15 adults in the country suffers from depressive illness and at least 10 per cent of the population suffers from depression that requires medical attention.

Musculo-Skeletal System

This therapy segment includes medication for the treatment of Rheumatoid Arthritis, Osteoarthritis and Analgesics. The Anti-inflammatory and Anti-rheumatic category accounted for 70 per cent of the total musculo-skeletal segment revenues in 2005-06.

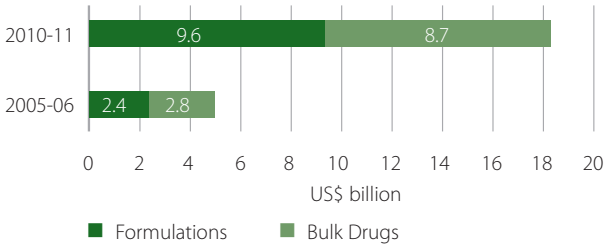
EXPORTS

Formulation exports would lead the way

With US$ 5.2 billion of estimated revenues in 2005-06, exports have become the mainstay of the Indian pharmaceutical industry. Presently, the share of bulk drugs exceeds that of formulations in the total pharmaceutical exports.

Formulation exports were estimated at around US$ 2.4 billion in 2005-06 and constitute 46 per cent of the total exports revenue pie while, the rest 54 per cent is constituted by bulk drugs, estimated at US$ 2.8 billion in the same period.

Forecasted Export Revenues

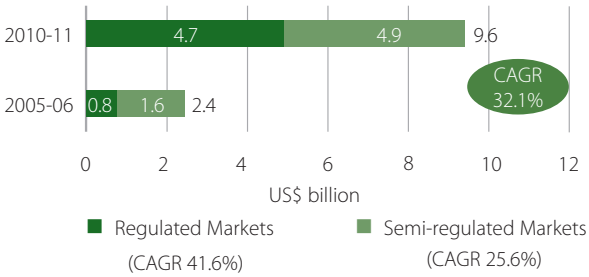


Source: CRIS INFAC

Overall pharmaceutical exports are estimated to increase at a CAGR of 30-32 per cent and reach US$ 18.3 billion in 2010-11. Moving at a healthy CAGR of 30-35 per cent, formulation exports are estimated to reach US$ 9.6 billion by 2010-11 and would surpass bulk drugs which are estimated to reach US$ 8.7 billion at a CAGR of 25 per cent in the same period.

The predictions made by Indian Pharmaceutical Alliance (IPA) are more bullish and estimate that the total export market would generate US$ 27 billion by 2012.

Formulation Exports Demand Outlook



Source: CRIS INFAC

Demand from regulated markets bound to increase

Traditionally, semi-regulated markets which comprise of Asia, Africa, Central Asian Republics (CAR), Confederation of Independent States (CIS) and Latin American nations, have accounted for the majority of formulations demand. However, over the past couple of years a gradual shift has been observed in the region-wise revenue mix. Over the past few years, the increasing demand of generics from the regulated regions has driven the proportion of sales to the regulated markets to 36 per cent in 2005-06 from 24 per cent in 2000-01. Exports to regulated markets surged by a CAGR of 33 per cent as compared to a CAGR of 15 per cent in the semi-regulated markets during 2000-01 to 2004-05.

Formulation exports to regulated markets are estimated to increase at a high CAGR of over 41 per cent to reach US$ 4.7 billion, by 2010-11, whereas the demand from semi-regulated region would experience a modest CAGR of around 26 per cent, to reach US$ 4.9 billion in the same period.

Increasing use of generic medication in the regulated market is the key reason for the high formulation demand from these regions.

Generics to drive the growth of Indian exports

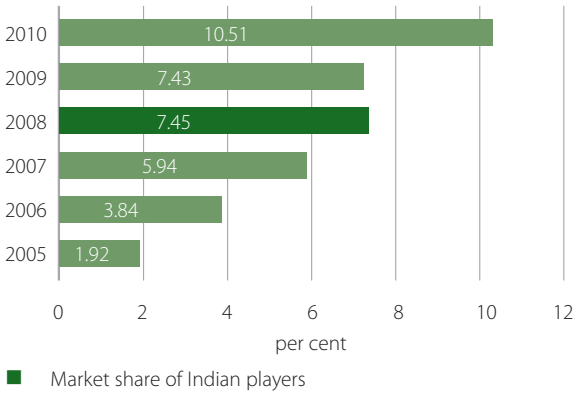
Globally, healthcare authorities are laying greater emphasis on promoting the use of generics to contain the public healthcare expenditure. The demand for generic medicines is expected to be significant from both, the United States (US) and European Union (EU) due to favourable regulatory framework.

Generic medication is expected to grow at a CAGR of 13.7 per cent between 2005-10 to reach US$ 85.7 billion. Patent expiry of existing medication is expected to contribute 9-10 percent of the total sales.

Indian companies are likely to be the key beneficiaries of the growth of the generics segment, owing to higher emphasis laid by them on this market over the past few years. This is evident from the aggressive Drug Master File (DMF) and Abbreviated New Drug Application (ANDA) filings made by Indian players. Indian companies received 57 ANDA approvals from US FDA during January-November 2006 as compared to 50 ANDA approvals in 2005.

By 2010-11, share of Indian players in the US market is expected to cross 10 per cent, up from 1.9 per cent in 2005-06. Formulation exports to US are expected to grow at a CAGR of 49 per cent between 2005-06 and 2010-11 to reach around US$ 2.6 billion.

Expected Market Share of Indian Players in the US Generics Market



Source: CRIS INFAC

Pricing pressures and shrinking margins in the generics space and the increasing litigation instances in the US have compelled Indian companies to consider opportunities beyond the US. Exports to Europe are likely to grow with a healthy CAGR of 32 per cent to reach US$ 1.8 billion by 2010-11. Indian companies have been strengthening their focus on the EU market.

Inorganic route has been the preferred entry option adopted by a majority of players to gain entry into EU. 75 per cent of the acquisitions made by Indian pharmaceutical companies in 2005 and 2006 (upto June) were targeted towards the European market.

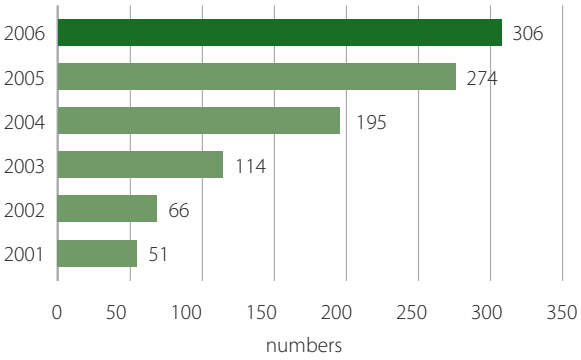
India to maintain focus on bulk drug exports

India has the distinction of being the supplier of high quality cost effective bulk drugs across the globe. Nearly 80 – 90 per cent of the bulk drugs produced in the country are being exported. Demand for bulk drugs has grown at a CAGR of 31 per cent since 2000-01, to reach US$ 2.8 billion in 2005-06. Presently, India is the world's fifth largest producer of bulk drugs.

Semi-regulated markets account for a majority of bulk drug demand, with 60 per cent exports directed to these regions only. However, demand from the regulated markets has been growing at a faster rate and would be the key driver of overall bulk drug export. In addition to this, the share of innovator pharmaceuticals in the total exports has increased from 6 per cent to 10 per cent.

India is rapidly emerging as a trusted outsourcing destination for not only generic drugs but also high-end, difficult to manufacture innovator/patented drugs. Indian companies have been at the forefront in leveraging the increased outsourcing demand for APIs/Intermediates, which is reflected in the aggressive DMF filings made by Indian companies.

DMF Filings from India



Source: US FDA

Indian companies filed 306 DMFs in 2006. The share of Indian companies in the total DMFs filed with US FDA increased to 44 per cent in 2006. In terms of the cumulative DMF filings, India is way ahead of other countries. China's share of DMF filings is nearly one-third of that of India. 14 Indian companies received 77 tentative approvals for active ingredients from US FDA during 2006 (till November). In comparison, only 9 companies received 77 US FDA approvals in 2005.

Indian companies investing in building world class capacities

In their drive to harness opportunities in international markets, Indian companies have been investing in building and scaling capacities to be able to match international

quality standards, thus ensuring that their plants comply with current Good Manufacturing Practices (cGMP).

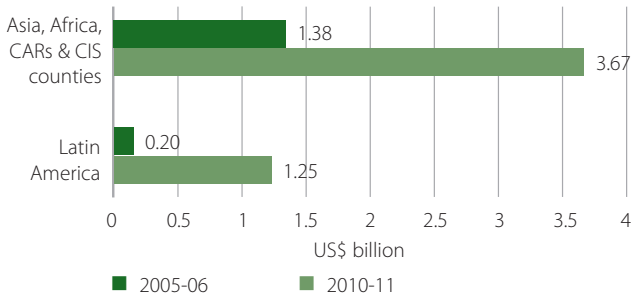
Presently, India has more than 100 US FDA approved plants, the highest outside the US. In addition to that, Indian players are increasingly opting to comply with standards laid down by various other international regulatory agencies such as TGA, MHRA, ANVISA, MCC, etc. and are vying for their accreditation.

Semi-regulated markets to enable steady growth

Semi-regulated markets with annual sales of US$ 53.6 billion in 2005-06, provide a source of steady revenue for Indian companies. Lower regulatory barriers, coupled with lower operational costs make these markets an attractive export destination for Indian companies, especially for small and medium size players.

Majority of exports from India are directed to Asia, Africa, CAR and CIS Regions. Exports to Latin American countries are low at present. However, they have been growing at a rapid pace and are expected to reach US$ 1.25 billion by 2010-11 from US$ 0.2 billion in 2005-06.

Semi-regulated Market: Region-wise Exports



Source: CRIS INFAC

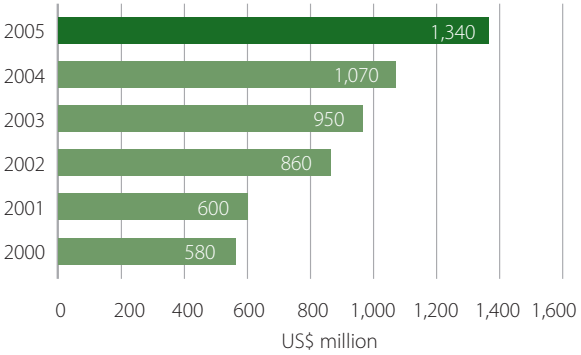
IMPORTS

India consumes a miniscule portion of the global pharmaceutical production. The country's pharmaceutical imports are primarily confined to the life-saving drugs and new generation of formulations that are under patent protection. These include anti-neoplastics, cardiovascular and anti-hypertensive drugs imported primarily by leading global pharmaceutical companies for sale in the domestic market.

The key imports consist of penicillin, antibiotics for treating gastrointestinal infection. Presently, life saving drugs can be imported duty free in the country, whereas all other pharmaceutical products are subject to import duty.

Revenues from the import of APIs/intermediates and finished formulations have nearly tripled in value from US$ 516.1 million in 1999 to US$ 1.3 billion in 2005.

Indian Pharmaceutical Imports



Source: World Trade Atlas

Top seven import destinations accounted for around 32 per cent of the total pharmaceutical imports in 2005. India's leading import suppliers include Switzerland, Germany, United States and France.

Indian pharmaceuticals Imports from Top 7 countries by Value (US$ million)

country	2002	2003	2004	2005	Jan-June 2006
Switzerland	92.6	95.7	82.8	109.2	115
Germany	57.6	52.6	61.9	85.3	51.3
United States	62.6	76.0	77.2	97.2	53.5
France	33.6	30.2	23.1	36.8	25.5
Denmark	31.4	33.3	24.3	42.7	30.9
Belgium	9.6	15.7	10.0	21.9	22.0
United Kingdom	24.9	25.6	40.6	34.9	24.5
Total	**312.3**	**329.7**	**319.9**	**428.0**	**305.2**

Source: World Trade Atlas

Imports from Switzerland, US and Germany primarily consist of finished medicament in dosage forms for retail sales. Around 45 MNC pharmaceutical companies are serving the Indian market through subsidiaries, collaborations and imports.

INDIA ADVANTAGE

Established manufacturing infrastructure

Congregative settlement tendencies of pharmaceutical units have led to the evolution of defined manufacturing and R&D clusters in the country.

Traditionally, pharmaceutical manufacturing clusters in India were limited to few Indian states such as Andhra Pradesh, Gujarat, Maharashtra and Goa. However, in the past decade new clusters have emerged across the country and have witnessed significant movement of pharmaceutical units to these locations.

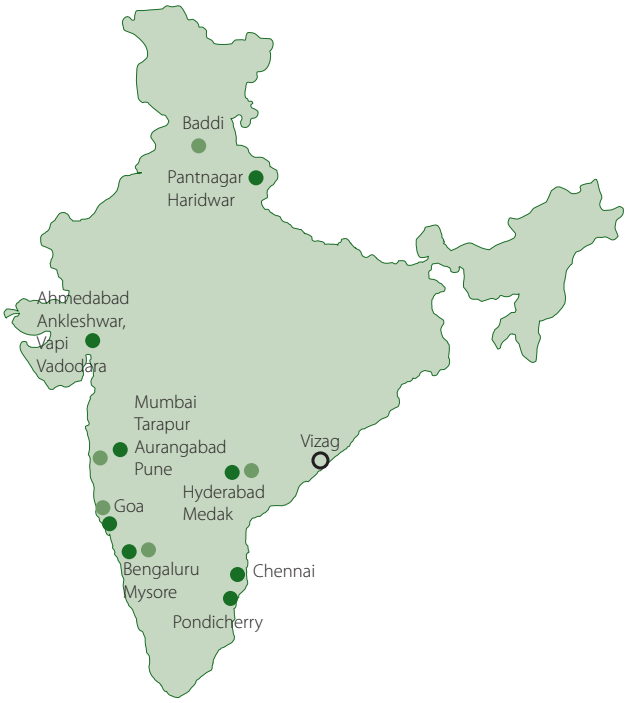
The primary factors which attributed to this movement are space constrains, environmental issues and special incentives offered by few developing states such as Himachal Pradesh, Uttarakhand, etc.

Traditional bulk drug clusters are located primarily in Gujarat, Maharashtra, Andhra Pradesh, Tamil Nadu, Goa, Pondicherry and Karnataka. Visakhapatnam (Vizag) in Andhra Pradesh is the upcoming bulk drug cluster that has generated significant interest in the APIs players.

Goa, Mumbai, Pune and Hyderabad have been the preferred destinations for formulation players in the past. However, Baddi in Himachal Pradesh and Pantnagar and Haridwar in the state of Uttarakhand are the upcoming formulation clusters, attracting formulation manufacturers from across the country due to fiscal incentives offered by the Government.

The R&D clusters have followed a similar development pattern. Apart from the National Capital Region (NCR), other R&D clusters have been limited to the established pharmaceutical regions in the country. High quality life, coupled with well developed physical and social infrastructure of tier-I cities has been the key reason for the development of knowledge intensive R&D clusters in these regions.

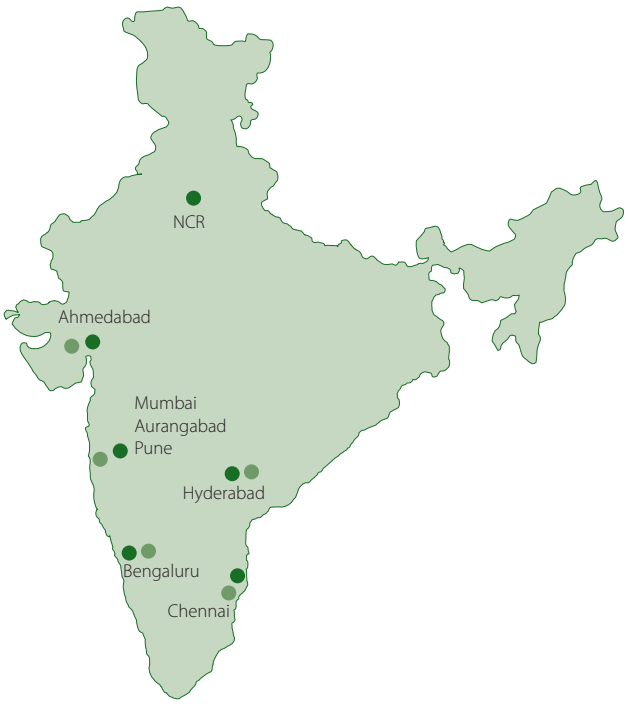
Key Manufacturing Clusters



Traditional Bulk Drugs Cluster	**Gujarat**- Ahmedabad, Ankleshwar, Vapi, Vadodara **Maharashtra** - Mumbai, Tarapur, Aurangabad, Pune **Andhra Pradesh** - Hyderabad, Medak **Tamil Nadu** - Chennai **Pondicherry** **Karnataka** - Mysore, Bengaluru, **Goa**
Traditional Formulation Cluster	Goa, Mumbai, Pune, Hyderabad
Emerging Bulk Drugs Cluster	Andhra Pradesh - vizag
Emerging Formulation Cluster	Himachal Pradesh - Baddi Uttranchal - Pantnagar

Source: E&Y Analysis

Key R&D Clusters



Captive R&D Units	National Capital Region Ahmedabad Mumbai Aurangabad Hyderabad Bengaluru Chennai
Contract R&D Units	Mumbai Hyderabad Bengaluru Chennai Ahmedabad

Source: E&Y Analysis

Developing Clusters

Based on the lines of biotech clusters in developed economies, the Government is encouraging the development of 'Pharma/Biotech Parks' for third party occupancy based on a public-private partnership model. These parks act as a geographic concentration/cluster of life sciences industry, research institutions, sci-tech academia and other amenities of scientific and general purpose.

The parks provide plug-and-play R&D and manufacturing infrastructure at par with international standards at an affordable cost. Further, many provide incentives and services for start-up, mid-stage, late-stage and manufacturing pharma/biotech companies seeking to develop innovative products and services, attract international organisations to locate their R&D activities in the parks and create and maintain international and national linkages, vital for the overall development of the cluster. Consequently, they serve as an ideal mechanism for fostering an environment of innovation.

As of October 2006, there were around 32 pharmaceutical and biotech Special Economic Zone (SEZs) which received in-principal/formal approval. Out of these, 20 are dedicated to the pharmaceutical industry while 12 are dedicated to biotechnology. Further, several pharma units are expected to be a part of multi-product SEZs. However, a majority of these SEZs focus on manufacturing activities and only a few are dedicated to R&D.

Enabling research infrastructure

The said growth has been furthered due to the presence of a robust infrastructure and adoption of technologically advanced processes. Government organisations such as Department of Science & Technology (DST), Council of Scientific and Industrial Research (CSIR) have been instrumental in the creation of world class facilities for drug discovery and development. These apex bodies have created a network of national institutions that host world class infrastructure to undertake research across various facets of drug development. These institutions have been associated with technology transfers for scale-up, validation and commercialisation. Presently, India has more than 200 government laboratories and several private research institutions, with state-of-the-art equipment and facilities for undertaking high-end research. Government-funded laboratories offer a range of preclinical R&D services and facilities to the pharmaceutical industry, R&D organisations, academic institutions and other interested organisations. These laboratories have been the pioneers in improving the discovery research scenario in the country. CSIR run laboratories have further been the prime generators of expert R&D professionals in preclinical/chemistry research.

Large skilled manpower base

India has a large qualified human resource base. The country has a well established system of higher and technical education which is central to the abundant trained and competent workforce.

The country has over 450 institutes/colleges and departments imparting pharmacy education. More than

25,000 pharmacy graduates pass out from these institutes every year.

- Around 1,000 biotech and biochemistry postgraduate students pass out every year
- Around 10,000 chemistry postgraduate students pass out every year
- Around 2,500 chemical engineering students pass out every year. The country had a pool of around 50,000 chemical engineering graduates in 2004-05
- Around 4,500 students pursue PhDs in various science streams
- 1,000 students pursue PhDs in engineering stream
- 1,000 PhDs in chemistry

Case Study: Government to introduce six more NIPERS

The National Institute of Pharmaceutical Education & Research, India, was established by the Government of India to cater to the long-standing demand for setting up a dedicated nodal agency for quality higher education and advanced research in the pharmaceutical sciences. The benefits derived out of these institutes have prompted the Government to start six new NIPERs in the country in Hyderabad, Ahmedabad, Hajipur, Kolkata, Guwahati and Rae Bareli as a part of the Eleventh Five Year Plan. Institutes at Kolkata, Ahmedabad, Hyderabad and Hajipur (Bihar) have started functioning.

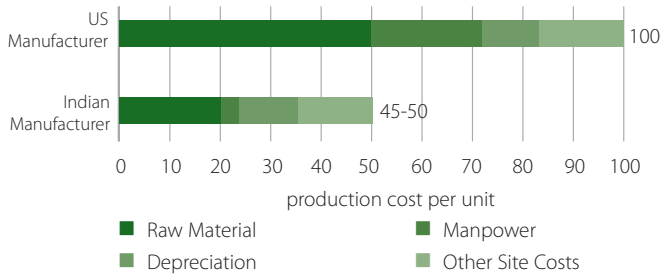
Key Research Institutes
• Central Drug Research Institute (CDRI), Lucknow
• National Institute of Pharmaceutical Education & Research (NIPER), Mohali
• Indian Institute of Chemical Technology (IICT), Hyderabad
• Centre for Cell & Molecular Biology (CCMB), Hyderabad
• Indian Institute of Chemical Biology (IICB), Kolkata
• Indian Toxicology Research Institute (ITRI), Lucknow
• Institute of Genomic and Integrated Biology (IGIB), New Delhi
• Institute of Microbial Technology (IMTECH), Chandigarh
• National Chemical Laboratory (NCL), Pune
• National Centre for Biological Sciences (NCBS), Bangalore
• Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru
• Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad
• Indian Institute of Science (IISc), Bangalore
• National Institute of Immunology (NII), New Delhi

India's Cost Arbitrage

India's cost competitiveness is the key reason why MNCs prefer to outsource R&D and manufacturing activities. India offers a 50-55 per cent savings in production cost of basic pharmaceuticals, compared to the US.

The three major components contributing to such a significant cost saving are manpower, raw materials and depreciation.

Illustrative Cost Bar: Average US Cost Structure=100



Source: OPPI-Adapted from Monitor Group, Study on Outsourcing Opportunities in the Indian Pharmaceutical Industry

Basic production cost in India up to 50 per cent lower than in the US

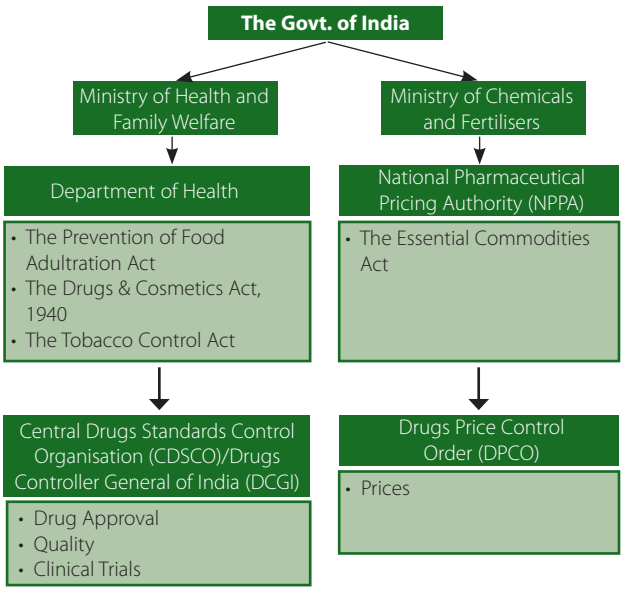
- **30 – 50 per cent lower depreciation**
  - FDA approved plants can be constructed in India for 30 – 50 per cent lower costs
  - Higher utilisation of equipment due to improved processes (not quantified)
- **85-90 per cent manpower cost savings**
  - Labour costs in India are typically 10-15 per cent of the costs in the US
  - Savings applicable across all hierarchal levels (e.g., operators, research scientists, etc)
  - Improved, more efficient processes contribute to lower labour costs per unit (not quantified)
- **40-50 per cent savings in raw materials**
  - Bulk drugs can be manufactured in house at 40-50 per cent of ethicals' cost
  - Excipients and intermediates sourced locally at 20-30 per cent lower costs
  - Most other raw materials can be sourced locally

Policy

REGULATORY FRAMEWORK

The Indian pharmaceutical industry has a multi-level hierarchical regulatory institutional framework. Two ministries of the Government of India play a major role in regulating the pharmaceutical sector in the country. Each of these ministries deals with different aspects of regulations and works independently. These are:

1. Ministry of Health & Family Welfare (MoHFW)
2. Ministry of Chemicals and Fertilisers (MoC&F)



DEPARTMENT OF HEALTH (DOH)

The Department of Health is one of the key departments of the Government of India, which regulates the pharmaceutical industry. The Department of Health has the Central Drugs Standard Control Organisation (CDSCO) and the Drugs Controller General of India (DCGI), as its main agencies which deal with key issues including drug approvals. Some of the major acts which the department administers, are:

1. The Drugs & Cosmetics Act, 1940
2. The Prevention of Food Adulteration Act
3. The IMA Act
4. The Tobacco Control Act

Central Drugs Standard Control Organisation (CDSCO)

As an agency of Department of Health, the CDSCO works both at the Central and the State level and is responsible for ensuring safety, efficacy and quality of drugs supplied to the public. The agency performs the above mentioned functions with the Drugs Controller General of India (DCGI) as the executive head.

The Drugs Controller General of India (DCGI)

DCGI is an apex body in the pharmaceutical industry governing issues such as product approval and standards, clinical trials, introduction of new drugs, and import licences for new drugs. Its major functions include:

- Laying down standards of drugs, cosmetics, diagnostics and devices
- Laying down regulatory measures, amendments to Acts and Rules
- To regulate market authorisation of new drugs
- To regulate clinical research in India
- To approve licences to manufacture certain categories of drugs as Central Licence Approving Authority i.e. for blood banks, large volume parenteral vaccines and sera
- To regulate the standards of imported drugs
- Work relating to the Drugs Technical Advisory Board (DTAB) and Drugs Consultative Committee

- Testing of drugs by Central Drugs Labs
- Publication of Indian Pharmacopoeia

MINISTRY OF CHEMICALS AND FERTILISERS (MOC&F)

The Ministry of Chemicals & Fertilisers constitutes bodies such as the Department of Chemicals & Petrochemicals, Department of Fertilisers, National Pharmaceutical Pricing Authority (NPPA), etc. These departments are entrusted with the responsibility of policy making, planning, development and regulations relating to:

- Chemicals
- Petrochemicals
- Pharmaceuticals

National Pharmaceutical Pricing Authority (NPPA)

NPPA was established on 29th August, 1997 as an independent body following the recommendations of Cabinet Committee after a review of Drug Policy in September 1994. It has been entrusted with the task of fixation/revision of prices of bulk drugs and formulations, enforcement of provisions of the Drugs (Prices Control) Order and monitoring the prices of controlled and decontrolled drugs in the country.

Drugs Price Control Order, 1995

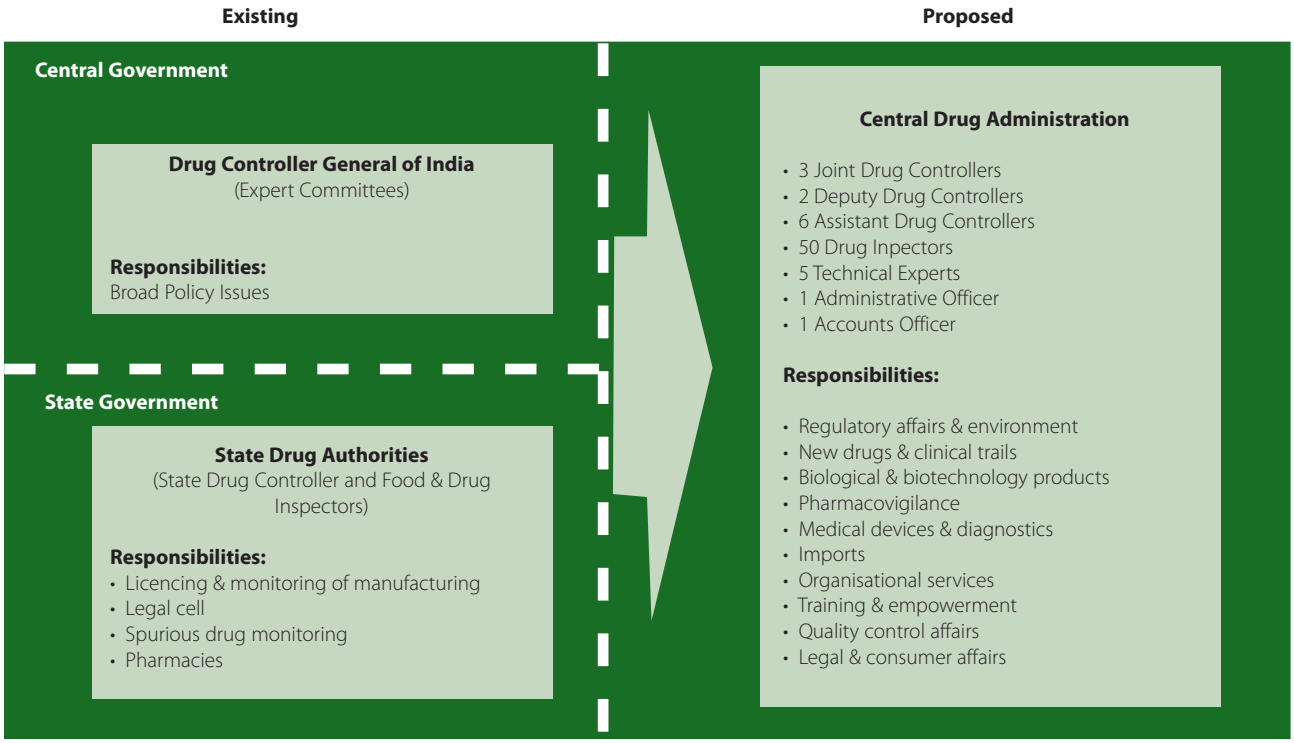
The Drugs Price Control Order (DPCO), 1995 is an order issued by the Government of India under Section 3 of the Essential Commodities Act, 1955 to regulate the prices of drugs. The order was introduced in 1970 and was amended in 1979, 1987 and 1995, and the corresponding numbers of drugs put under price control were 347, 145 and 74, respectively.

DPCO controls the domestic prices of major bulk drugs and their formulations with an aim to provide patients with medicines at affordable prices. DPCO ascertains, as per Drug Policy guidelines, the bulk drugs (and their formulations) to be kept under price control.

CDA - INDIA'S NEW DRUG REGULATOR

Presently, India has a bifurcated drug regulatory system. Regulatory functions are divided between the Centre and State authorities. Existing infrastructure at the Centre and the State is inadequate to perform the assigned functions of drug administration with efficiency and speed.

A strong, well equipped, empowered, independent and professionally managed body, which could be given the status of Central Drug Administration (CDA), reporting directly to the Ministry of Health, has been contemplated



as the most appropriate solution to address the above mentioned issues.

The Central Cabinet approved the same in January 2007. The move is expected to facilitate upgradation of national drugs regulator, uniformity of licencing and enforcement and improvement in drug regulations. The proposed organisation structure of the CDA would be analogous to US FDA. The efficiency and efficacy of drug administration is expected to be much higher, post this transition. This should augur well for getting approvals for protocols and permissions for conducting clinical trials.

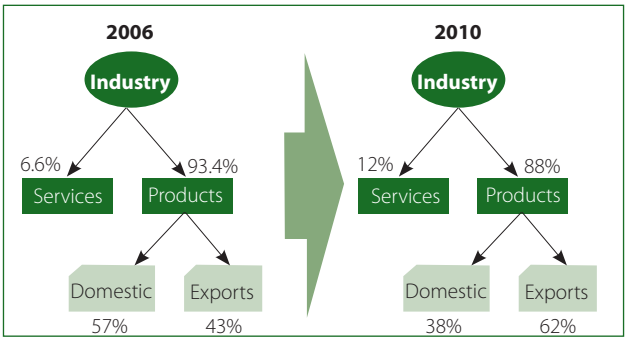
Budget 2007-08: Perspective of the Pharmaceutical Industry

- Reduction in import duty on medical equipment to 7.5 per cent
- Section 35 (2AB) that allows a weighted deduction of 150 per cent for expenditure relating to in-house research and development extended for five more years, until March 2012
- Life saving vaccines exempt from excise duty
- Free samples not under the purview of Fringe Benefit Tax (FBT)
- Clinical trials of new drugs exempt from service tax to make India a preferred destination for drug testing
- Provision of US$ 215 millionn for AIDS control programme
- Provision of US$ 288 million in FY08 to fund polio rounds and vaccines for better outreach/penetration in the 20 high risk districts of Uttar Pradesh and 10 districts of Bihar

Key Trends & Drivers

CHANGING PARADIGM

The pharmaceutical industry has been witnessing a transformation in the recent past. Earlier, the industry followed a product centric approach, with manufacturing aimed towards fulfilling the domestic demand ,while exports were largely confined to supplying APIs & intermediates to the less regulated markets. Further, the contribution of services has been miniscule in the total revenues of the pharmaceutical industry.



Source: E&Y Analysis

Presently, services account for only 6.6 per cent of the total revenues of the Indian pharmaceutical industry. However, it is estimated to increase upto 12 per cent by 2010-11 due to continuous spurt in clinical research outsourcing, coupled with increase in discovery and preclinical research activities.

The contribution of exports to the total product revenues in 2006-07 was 43 per cent. However, moving at a high CAGR of 30-32 per cent, contribution of export revenues would surpass the share of the domestic market in the total revenue mix. By 2010-11, exports would contribute 62 per cent to the total product revenues.

Further, unlocking of US$ 80 billion revenues patent expiry during 2006 – 2010 would present significant opportunities for generic players, especially the Indian companies who would be among the first to capitalise on this opportunity.

INCREASING PENETRATION DRIVING GROWTH

The growth fundamentals of the domestic market are undergoing a sea change. Over the past few years, new product launches have been the mainstay of the growth in the domestic market. However, with expansion of healthcare facilities in the rural and far flung areas, increased penetration has been driving the growth.

With total sales revenues of US$ 1.4 billion, the Indian pharma market in rural areas witnessed a growth of 39 per cent as compared to the growth of 18 per cent in the overall domestic market in November 2006 . This is in stark contrast with previous year's growth pattern. While new product launches used to contribute to a large share of revenues, in 2006 they contributed to only around 1 per cent of the market, while 15 per cent of the growth is now being contributed by volume growth.

In 2006, while the number of new product launches increased for the top 10 players, it decreased for the next 15 players in comparison with the previous year. The contribution of new sales from new product launches to overall sales declined to around 4.8 per cent from 5.1 per cent for the top 10 players and 8 per cent from 9.6 per cent for the next 15 players.

Expansion of healthcare infrastructure in rural areas has facilitated the said change. Increased government spending on roads, telecommunication and healthcare infrastructure has facilitated the foray of pharmaceutical companies into relatively distant pockets of the market.

EXPANSION OF PRIVATE SECTOR HEALTHCARE DRIVING ACCESSIBILITY

Medical Value Travel has led to an investment spurt in the private healthcare services in the country. The number of specialist hospitals has doubled and secondary care hospitals have further grown in numbers. There is an increasing investment by the private sector in healthcare facilities across tier-I and II cities in the country. An estimated 1 million beds would be added by 2012, taking the total beds available in the country to over 2 million. An estimated US$ 69.7 billion would be invested by the private sector in healthcare infrastructure by 2012.

The healthcare expenditure of Indians has been rising rapidly and the demand for high quality services is snowballing into a rise in drug demand and consumption. The number of patients visiting Indian hospitals is expected to rise by 30 per cent, to 22 million by 2015.

INCREASING PENETRATION OF MEDICAL INSURANCE

Penetration of medical insurance has grown rapidly over the past couple of years and is further poised to increase pace due to increasing influx of foreign players. The industry is likely to expand in the future due to favourable regulatory changes such as permitting FDI of 51 per cent in the stand alone health insurance companies and setting the minimum capital requirement at US$ 5.4 million.

Further, the Indian middle class with its increasing earning power is likely to account for a major portion of this market. Increasing penetration of customised insurance plans would further drive the affordability factor which would influence the consumption of medical and healthcare products.

RISING DISPOSABLE INCOMES TO DRIVE DRUG CONSUMPTION

India's booming economy and higher consumer spending is changing the face of the Indian pharmaceutical market by influencing the consumption of drugs. India has a strong 16.4 million middle-class households with annual income ranging between US$ 4,849 – US$ 24,242 in 2006. This segment is expected to grow at a CAGR of 14 per cent to become 28.4 million by 2010 and would be the key driver of consumption in the urban market.

In addition to this, there are 1.7 million households in the upper income group with an annual income greater than US$ 24,242 in 2006. This is the fastest growing segment and would increase to 3.8 million moving at a CAGR of 21 per cent.

Aggregated household expenditure on healthcare services increased at a CAGR of 9.3 per cent in the period 1993-94 and 2001-02. Healthcare expenditure is expected to rise by 15 per cent per annum.

Average consumer spending has doubled over the past decade. It has grown at an annual pace of 6 per cent during the past 10 years. Around 75 per cent of Indian population is under 40 years of age and is employable. High purchasing potential of the burgeoning Indian middle class would drive the consumption of healthcare services, including pharmaceuticals which constituted 22.6 per cent of total healthcare expenditure in 2007

Income Distribution Across Households

	FY1996	FY2002	FY2006	FY2010	CAGR
Rich (Annual Income greater than US$ 24,242)	260,000 million	807,000 million	1.7 million	3.8 million	21%
Middle Class (Annual Income between US$ 4,849-24,242)	4.5 million	10.7 million	16.4 million	28.4 million	14%
Aspirants (Annual Income between US$ 2,182-4,849)	28.9 million	41.3 million	53.3 million	75.8 million	7%
Deprived (Annual Income less than US$ 2,182)	131.2 million	135.4 million	132.2 million	114.4 million	1%

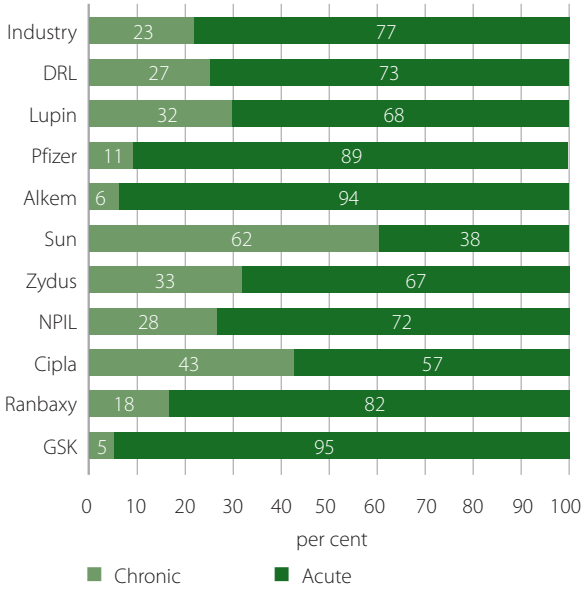
Source: 'The Great Indian Market', August 2005, National Council of Applied Economic Research

Rising disposable incomes would drive the affordability and would enable the Indian population to not only seek medical attention for major ailments, but also for minor medical conditions. Hence, rising consumer base coupled with the accessibility and affordability would be the key future growth drivers of the Indian pharmaceutical market.

ACUTE THERAPY DOMINATE SALES, CHRONIC THERAPY TO FUEL GROWTH

Globally, more than 57 per cent of the top 10 therapy classes, which account for around 30 per cent of global sales, belong to the chronic segment which is growing faster than the acute segment, propelled by the rise in lifestyle diseases and the increasing stress levels. In India, chronic therapy contributes to only 23 per cent of the total revenues, while acute therapy dominates with a share of 77 per cent.

Acute vs Chronic Sales Mix of Top 10 Indian Pharmaceutical Companies



Source: CRIS INFAC

New products launched in the chronic therapy segment outnumbered the launches in an acute therapy segment in 2006. Key factors that would fuel the growth of the chronic therapy segment are -

- Growing geriatric population : 4.9 per cent of the total Indian population in 2005 consisted of 65+ age group. This is further expected to increase to 6.4 per cent by 2015 and 7.5 per cent by 2020
- Rapid urbanisation of rural population, which would lead to increase in the number of people suffering from lifestyle diseases such as diabetes, obesity, depression, etc. 28 out of every 100 persons in India live in urban areas. Urban population has grown by 31 per cent – from 217 million in 1991 to 285 million in 2001 - as against 18 per cent in rural areas

Though the share of the acute segment such as anti-infectives would decrease in the future revenue mix, it would continue to grow at a steady pace due to its mass therapy nature and the unresolved issues of sanitation and hygiene in the country. Other therapeutic categories focusing on diseases related to blood, ophthalmology, HIV and stomatology are expected to grow above industry average in the long term.

SHIFTING FOCUS OF INDIAN PHARMA TOWARDS MARKETS SUCH AS JAPAN

Although US is still the largest pharmaceutical market and has been the prime target for generics players across the globe, Indian companies are aggressively eyeing the generics opportunities in other markets such as Japan.

Japan is the world's largest pharmaceutical market after the US. With sales worth US$ 60 billion in 2006, it constitutes around 11 per cent of the global market. However, generics penetration has been extremely low till date due to the unfavourable legislation and their perceived reputation as inferior products.

The Japanese Government's spending on health insurance exceeded US$ 35billion in 2007. In order to contain the burgeoning healthcare cost, the Government has initiated a string of pro-generics legislation reforms to increase the penetration upto 40 per cent from the present 16 per cent. The key reforms undertaken by the Government are as below –

- Generics substitution allowed
- Physicians are given incentives to prescribe generic medications over branded ones
- Faster system to approve drugs
- Removal of obligations to manufacture locally

Indian companies have been quick to leverage the Japanese opportunity.

- Cadila Healthcare acquired Nippon Universal

Pharmaceutical Ltd.

- Lupin has acquired a majority stake in Japanese generic drug maker Kyowa Pharmaceutical Industry Co. Ltd.
- Dishman has established a Joint Venture (JV) with Azzuro Corporation in 2007
- Ranbaxy has established a JV with Nippon Chemiphar
- Stride has entered into a JV with Sorm Corporation Ltd.

With the introduction of generics substitution in 2006, the market is now poised to become an important destination for many global generics players.

INDIAN PHARMACEUTICAL COMPANIES PREFERRING THE INORGANIC GROWTH ROUTE

Over the past couple of years, Indian pharmaceutical companies have adopted an aggressive approach towards pharmaceutical exports. While the large Indian companies have increased their foothold in the regulated markets, small and medium size players are focusing on semi-regulated markets.

Mergers & Acquisitions (M&A) has been the key strategy adopted by Indian companies to gain an instant foothold in the exports market. Increased penetration, access to an established distribution network and increase in buyer confidence due to localised presence has been the key reason for the acquisition spree of Indian companies.

M&A Deals by Indian Companies (2006)

Acquirer	Target	Price US$ million
Natco Pharma Ltd.	Nick's Drug Store	NA
Aurobindo Pharma Ltd.	Milpharm Limited	NA
Dr Reddy's Laboratories	Betapharm Arzneimittel GmbH	597.33
Marksans Pharma Ltd.	Novo Pharmaceuticals Australsia PTY Limited	NA
Ranbaxy Laboratories Ltd.	Unbranded generics business of Allen S.p.A (GSK unit)	NA
Ranbaxy Laboratories Ltd.	Terpia S.A	321.11
Ranbaxy Laboratories Ltd.	Ethimed NV	NA
Shasun Chemicals & Drugs Ltd.	Rhodia Pharma Solutions	NA
Lifecell – Associate of Shasun Chemicals & Drugs	Saneron CCELL Therapeutics Inc.	NA
Dishman Pharmaceuticals & Chemicals Ltd.	Solutia Inc.	74.50
Nicholas Piramal	Pfizer manufacturing unit at Morpeth in UK	NA
Ranbaxy Laboratories Ltd.	Mundogen generics business (GSK)	NA
Aurobindo Pharma Ltd.	US FDA compliant cGMP facility	19.00
Orchids Chemicals & Pharmaceuticals Ltd.	Bexel Pharmaceuticals	3.00
Serum Institute India Ltd.	Lipoxen PLC	4.98
Kemwell Pvt. Ltd.	Pfizer's Swedish Plant	NA
Dr Reddy's Laboratories	Litaphar SA	4.45
Bilcare Ltd.	DHP Ltd	5.00
Stride Acrolab Pvt Ltd.	Drug House of Australia (Asia) Pvt Ltd.	12.48
Wockhardt Ltd.	Pinewood Laboratories	150
Nicholas Piramal India Ltd.	Boots Piramal Healthcare Pvt Ltd.	3.96 (51% stake)
Wanbury Ltd.	Cantabria Pharma	62.22
VVF Ltd.	Colgate Palmolive's American Plant	NA
Ranbaxy Laboratories Ltd.	Be-Tab Pharmaceuticals	70.00
Panacea Biotec Ltd.	Cambridge Biostability Ltd.	3.78
Reliance Life Science	GeneMedix Plc	63.2
JB Chemical & Pharmaceuticals Ltd.	Biotech Laboratories Ltd.	5.10

Source: Grant Thronton Deal Tracker

RISING CONFIDENCE OF GLOBAL INNOVATOR PHARMA COMPANIES IN THE INDIAN MARKET

Enactment of Product Patent in 2005 has reposed the confidence of innovator pharma companies in the Indian market. Since January 2005 to date, about eight patented products have been launched in the country. Pfizer has launched five of them, while Roche and GSK launched two and one, respectively.

Patented Molecule Launches in India after Enactment of Product Patent

Products	Company	Therapeutic Category	Launch Date
VFend	Pfizer	Systemic Anti-fungal	Feb '05
Viagra	Pfizer	Erectile Dysfunction	Dec '05
Lyrica	Pfizer	Neuropathic	Jan '06
Caduet	Pfizer	Cardiovascular	Feb '06
Macugen	Pfizer	Wet Age-Related Macular Degeneration	-
Carvedilol	GSK	Cardiovascular	Mar '06
Tamiflu	Roche	Bird flu	Apr '06
Pegasys	Roche	Hepatitis C	May '06

Source: E&Y Research

The launch of patented products in India has been rather slow, as the innovators are treading a cautious approach and are awaiting further clarity on various issues such as data protection, patenting of derivatives and pre- and post-grant opposition.

Product patent regime is unlikely to impact the current market scenario in the medium term till 2009-10 since majority of the drugs are already available in the country at competitive prices. However, in the long term, more patented products are expected to be launched in the domestic market.

GLOBAL PHARMACEUTICAL COMPANIES ESTABLISHING LOCAL PRESENCE

Going a step further, international companies are increasingly looking at India as a favourable option for setting up research and development units, as well as global clinical trial centres, a trend that is likely to gain momentum. Global R&D companies such as US based AMRI and Nektar and Germany based Taros have already set up their centres in different parts of India.

Investment by Global Pharma Companies in India

Company	Area of Focus in India	Investment (US$ million)
Allergan Inc	Inflammatory, infection, urological indications	3 – 5
Eisai Pharmaceuticals	API processes	120
Dupont	Molecular biology, bio-informatics and polymer synthesis	23
Ratiopharm GmbH	Basic processes	36
Teva	Basic processes	3 – 4
AstraZeneca	TB & NCE research, process & development	15
BMS-Syngene	Basic drug discovery	N/A
Pliva	Basic studies for generics	1
Nektar Therapeutics	Pre-clinical and bio-analytical development	10

Case Study: AMRI extends its R&D centre at Hyderabad, India

Albany Molecular Research Inc., a global drug discovery company that provides chemistry services to pharmaceutical and biotechnology companies, has announced the construction of a new 50,000 sq. ft. R&D centre at the Shapoorji Pallonji Biotech Park in Hyderabad, India. Slated to be completed in the later part of 2007, the new R&D centre would conduct contract projects in early stage drug discovery research, including custom chemical synthesis and medicinal chemistry. In addition, the new facility would house a scale-up laboratory, which would be used to develop efficient methods for producing larger quantities of active pharmaceutical ingredients and intermediates. When fully staffed, the new facility would add over 100 employees to the company's existing Hyderabad operations, which currently has 19 employees in the facility at ICICI Knowledge Park. The current facility can accommodate upto 40 employees and is expected to reach full capacity in the coming months.

STRATEGIC PARTNERSHIPS ARE RISING

An emerging trend is the symbiotic collaboration between international and Indian companies with research and development capabilities. A step further to cost-based outsourcing, these partnerships reflect increased interest and confidence in India's research competencies and infrastructure. Collaborative alliances, wherein both the stakeholders pursue a high-risk, high-reward strategy, are increasingly appearing on the alliance landscape. These alliances involve joint research agreements and co-development arrangements between companies.

The nature of in-licensing deals in India is evolving from being marketing oriented to research driven. Furthermore, early-stage products are increasingly gaining a share of the investment pie, primarily due to their lower valuations.

Outlicensing has further been on the rise, driven by small companies with promising candidates or

Select Strategic Alliance by Indian Companies

Indian Company	Overseas Company	Description
Advinus Therapeutics	Merck & Co.	Discovery and clinical development collaboration in metabolic disorders
Nicholas Piramal	BioSymtech Inc	The collaboration centres on the drug 'BST- InPod', which is being developed to alleviate chronic heel pain
	Morvus Technology	To undertake research in the area of cancer, diabetes, arthitis
GVK Biosciences	INC Research	JV will establish a dedicated resources capability to offer phase I-IV clinical development programmes in India
Ranbaxy	Glaxosmithkline	Ranbaxy will advance leads beyond candidate selection to completion of clinical proof of concept. GSK, thereafter, will conduct further clinical development for each programme and take resulting products through the regulatory approval process to final commercialisation
	Medicine for Malaria Ventures	Research for discovering new medicines for treating malaria
Biocon's Syngene	BMS	Syngene International, will work with Bristol- Myers Squibb to establish a research facility in Bangalore with more than 400 scientists to help advance Bristol- Myers Squibb's discovery and early drug development
Juibilant Organosys	ELI Lilly	Collaboration in the area of discovery research
Connexios	Rheoscience	Developing anti-diabetes molecule
Suven Life Sciences	ELI Lilly	NCE research for nervous system disorders
Zydus Cadila	Onconova	For research in the field of oncology
Dr. Reddy's	Rheoscience	Developing anti-diabetes molecule
	Argenta	Research in the field of respiratory diseases
	Clin Tech	Development of anti-cancer compound

Source: E&Y Research

Select Out-licensing Deals by Indian Companies

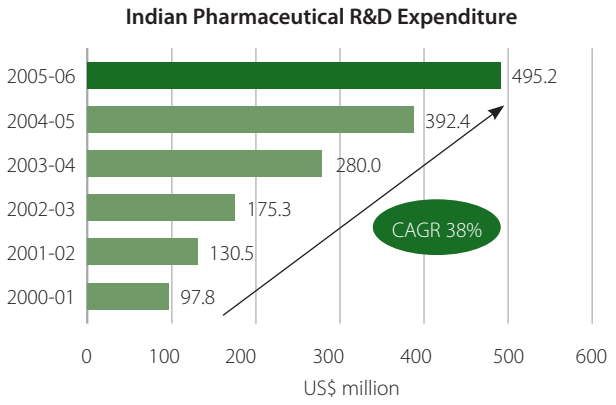
Indian firm	Partner	Molecule/ Technology	Deal Value (US$ million)	Year	Development Phase
Ranbaxy	Bayer	Cipro XR (NDDS)	65	1999	NA
	PPD Inc	RBx 10558 (Dyslipidemia)	44	2007	NA
Torrent	Novartis	AGE Breaker (diabetic)	3	2001	Development stage
Glenmark	Forest (for N. America)	Oglemliast (Asthma/ COPD)	190	2004	Phase I
	Tejin (for Japan)	GRC 3886 (Asthma/ COPD)	53	2005	Phase II
	Merck	GRC 8200	247	2006	Phase II
	Eli Lilly	GRC 6211	135	2007	Phase II
Lupin	Cornerstore Bioparm	Anti-infective (NDDS)	10.5	2005	NA
	Laboratories Servier	IP data on Perindopril	26.7	2007	NA

Source: E&Y Research

technologies lacking financial muscle to take them through the investment- heavy clinical development and marketing phases.

An increasing number of companies from the regions with a mature pharma-biotech industry, other than the US, are eyeing India as a potential destination for forging strategic alliances in life sciences. As a powerhouse of biopharmaceutical technologies and products, the interest shown by these companies in India is a testimony of the country's growing prominence in the global life sciences space.

THE INCREASING QUEST FOR NEW CHEMICAL ENTITIES (NCE)



Source: Assocham

Having focused their efforts on generics research for decades and transforming the global generics landscape, Indian companies are now striving to move up the value chain and establish themselves in the innovator league of pharmaceutical companies.

Drug Development Pipeline of Key R&D companies in India

	Discovery/ Preclinical Phase	Phase I	Phase II	Phase III
Ranbaxy	4-6	0	1	0
Dr Reddy	2	3	1	1
Glenmark	3	1	2	0
Wockhardt	4	1	1	0
Zydus Cadilla	1	2	2	0
Nicholas Piramal	2	1	2	0
Lupin	0	1	2	1
Orchid	12	2*	1*	0
Sun	3	0	1	0
Torrent	7	0	0	0

Source: Company Websites, Secondary Research, *expected to enter

Enactment of Product Patent Act in 2005 has further acted as the catalyst, encouraging Indian companies to dedicate substantial funds for the NCE research to accomplish a sustainable long term growth. Annual R&D spend of Indian companies has witnessed a CAGR of 38 per cent between 2000-01 and 2005-06.

Investment over the past has started reflecting in the ever burgeoning NCE pipeline of Indian companies. Apart from established companies such as Ranbaxy and Dr. Reddy's, players such as Wockhardt and Zydus Cadila, Orchid, etc. have invested significantly in their discovery research programmes.

Recently, with Dr. Reddy's NCE, Balaglitazone, becoming the first indigenous molecule to enter the Phase III trial, Indian pharma industry has crossed a major landmark.

Growing R&D pipeline of Indian companies presents significant in-licensing opportunities for global companies.

Given the presence of a large number of NCEs/ NDDS projects in Phase I and Phase II, some of these projects are likely to approach commercialisation over the next 2-3 years. Success of even a few of these molecules will lead to substantial value creation within the Indian pharma industry.

IMPROVING PRIVATE EQUITY (PE) SCENARIO

Over the past couple of years private equity has emerged as the trusted financing option for the Indian life sciences industry. The PE funds are not only assisting Indian companies in their expansion plans, but have also been providing funds for venturing into high risk and capital intensive segments such as discovery research. Further, increasing availability of venture capital and angle investors has facilitated the number of start-ups in these segments.

In 2006, private equity investment rose by over 230 per cent to US$ 7.46 billion, compared to US$ 2.26 billion invested in 2005. The PE buoyant confidence was evident by the fact that Life Sciences emerged as one of the leading recipients of funds, accounting for 18 per cent share of all VC&PE investments in 2005. In 2006 more than US$ 4 billion worth of private equity deals materialised in the life sciences space in India.

PE players are increasingly taking a positive bet on the Indian pharmaceutical industry as it has demonstrated tremendous growth potential and is emerging as a key outsourcing hub for global companies. Further, it is expected

that the increasing appetite of Indian companies for cross-border deals would influence the capital requirement and further boost the PE market.

Private Equity Deal in Pharma & Healthcare (2006)			
Investors	**Investee**	**%Stake**	**Deal Value**
Carlyle Group	Claris Life sciences	NA	20.0
Xenox & Agnus	Grandix Pharmaceuticals	30	2.0
Actis	Paras Pharmaceuticals	23	42
Actis Capital LLP	Add Life Medical Institute Ltd.	NA	15.50
Aureos India	Accutest Research Labs	NA	4.11
Bennett Coleman & Co. Ltd.	Thyrocare Technologies Ltd.	NA	NA
Chrys Capital	Intas Pharmaceuticals	12.47	11.78
Citi Venture Capital	Elder Pharma	4.50	NA
Fidelity Investment	Avesthagen	12-14	11
Gujarat Venture Finance Ltd	Celestial Biologicals Ltd.	NA	0.45
HSBC Global Investment Fund	Glenmark Pharmaceuticals	6.70	67.56
ICICI Venture Funds	Metropolis Health Services	NA	7.78
ICICI Venture Funds	Arch Pharmalabs	Increasing to 33	22
IDFC Pvt. Equity	Healthcare Global Enterprises	NA	11.11
IDFC Pvt. Equity	Manipal Health System Pvt. Ltd.	NA	20.0
International Finance Corporation	Ocimum Biosolutions	Minority Stake	6.50
New Vemon Pvt Equity Ltd.	Unichem Laboratories Ltd.	5.20	12.44
Nomura Group	Dishman Pharmaceuticals	5	11.30
Paul Capital Partners	Glenmark Pharmaceuticals Ltd.	NA	27.0
Sequoia Capital India	Paras Pharmaceuticals	NA	12.0
Soros Pvt. Equity Partners and Blue River Capital	Fortis Healthcare	6	33.33
Swiss Reinsurance Company (Swiss Re)	TTK Healthcare Services Pvt. Ltd.	26	NA
The Blackstone Group	Emcure Pharmaceuticals	NA	50
Trikona Capital	Fortis Healthcare	NA	18

Source: Grant Thronton Deal Tracker

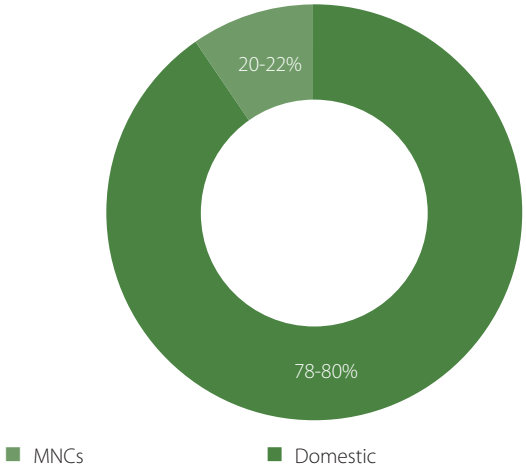
Key Players

INDIAN PLAYERS DOMINATE THE DOMESTIC MARKET

Indian companies dominate the domestic market, while MNCs have significant presence, with GSK leading the domestic sales tally. 8 out of the top 10 pharma companies are domestic players.

Presently, multinational pharma companies have a share of around 20-22 per cent in the domestic pharma market. GSK was the market leader in 2006 with a share of around 6.45 per cent of the total retail sales, followed by Ranbaxy which is India's number one pharmaceutical company.

Break-up of Sales of Indian Pharma Market



Source: Company Websites, Secondary Research

Top 20 Pharmaceutical Companies	Sales Dec 2006 (US$ million)
Ranbaxy Laboratories Ltd.	997.29
Cipla Ltd.	738.96
Dr. Reddy's Laboratories Ltd.	557.42
Lupin Ltd.	408.91
Glaxosmithkline Pharmaceuticals Ltd.	408.02
Nicholas Piramal India Ltd.	359.14
Aurobindo Pharma Ltd.	351.36
Sun Pharmaceutical Ltd.	322.43
Cadila Healthcare Ltd.	318.76
Wockhardt Ltd.	255.03
Aventis Pharma Ltd.	231.16
Orchid Chemicals & Pharmaceuticals Ltd.	210.28
Ipca Laboratories Ltd.	195.34
Pfizer Ltd.	189.95
Matrix Laboratories Ltd.	187.73
Torrent Pharmaceuticals Ltd.	177.22
Biocon Ltd.	173.48
Alembic Ltd.	158.57
Glenmark Pharmaceuticals Ltd.	147.83
U S V Ltd.	138.48

Source: Prowess

RANBAXY LABORATORIES

Introduction

Ranbaxy Laboratories Limited is India's largest integrated research based pharmaceutical company. Incorporated in 1961, it is ranked among the top 10 generics companies in the world. The company employs more than 11,000 employees.

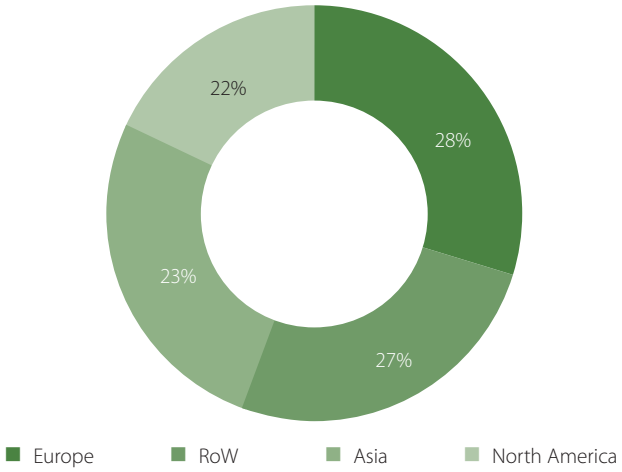
Footprints

The company has ground operations in 49 countries and manufacturing operations spread across 11 nations. Presently, the company's products are available in more than 125 countries.

Business Functions

- Active pharmaceutical ingredients
- Branded formulations
- Generics
- NCE research

Region-wise Revenue Mix (2006)



Source: Company's corporate presentation

Revenue & Growth

The company's revenue in 2006 was US$ 1.33 billion. Exports contributed around 80 per cent of the total revenues. In the domestic market, Ranbaxy is the largest pharmaceutical company by sales, with a market share of 5.10 per cent.

Focus Therapeutic Areas

Anti-infectives, antiretrovirals, cardiovascular, musculo-skeletal, dermatological, gastrointestinal, central nervous system, respiratory, genito-urinary and nutritional segments.

Capabilities

Ranbaxy has proven capabilities in generics and innovative research. It has world class API and dosage forms manufacturing facilities which are cGMP compliant and has international accreditations across the globe.

Ranbaxy's research focus is on NCE and developing New Drug Delivery System (NDDS) for creating a differential product portfolio. Key NCE focus areas are infectious diseases, urology, metabolic diseases and inflammatory/ respiratory diseases. The company has a strong NCE pipeline of 10 molecules under different phases of drug discovery.

Future Outlook

Ranbaxy aspires to become a research based pharmaceutical company with revenues of US$ 5 billion by 2012. Further, the company envisions featuring among the 5 global generics players by 2012.

DR. REDDY'S LABORATORIES

Introduction

Dr Reddy's Laboratories Limited was established in 1984. The company ranks among the top 15 generics players in the world. It employs around 6,120 employees worldwide. It was the first pharma company in Asia-Pacific (outside Japan) to be listed on New York Stock Exchange (NYSE) and first Indian company to out-license NCE to a global pharma major for clinical trials.

Footprints

Presently, the company has a presence in 35 countries with operations in over 115 countries. It markets pharmaceutical products in more than 100 countries. The company has JVs in China and South Africa, wholly owned subsidiaries in US, UK, Russia and Brazil, representative offices in 11 countries worldwide and NCE drug discovery research centers in Atlanta, US and Hyderabad, India.

Business Functions

- Active pharmaceutical ingredients
- Branded formulations
- Generics
- Specialty Pharmaceuticals
- Custom pharma services
- Biologics

Revenue & Growth

FY 2006-07 Net Revenues: US$ 1.51 billion

Revenue by Business	
Branded Formulations	41%
APIs	34%
Generics (including betapharm)	17%
CPS (including Falcon)	5%
Emerging Business	3%

Source: Company Website

Revenue by Market	
North America	44%
Europe	23%
India	14%
Rest of the world	12%
Russia & CIS	7%

Source: Company Website

The company has a well established business of manufacturing APIs and branded formulations. It started generics operations in 2001 and focuses primarily on North America and EU. In addition to this, the company is investing in creating businesses of the future- the innovation led businesses - of specialty and drug discovery

In 2006-07, the company generated revenues of US$ 1.5 billion. Overseas business contributed around 86 per cent the total revenues. The company's branded formulation business is the largest and contributes around 41 per cent the total revenues, followed by APIs with a share of 34 per cent.

Capabilities

The company's NCE research focus is in the areas of metabolic disorders, cardiovascular indications and cancer. The company has filed 81 patents with the US PTO, of which 41 have been granted. About 951 scientists worldwide and 323 scientists, are dedicated to new drug discovery research. The company has proven skills in synthetic and analytical chemistry to develop innovative cost effective manufacturing processes and expertise in developing innovative formulations

Future Outlook

The company aspires to become a discovery led global pharmaceutical company. Its aim is to become one of the top 10 generic companies in the world.

CIPLA

Introduction

Cipla was set up in 1935 in Mumbai. Presently, Cipla is known as the world's largest manufacturer of cost effective anti-retroviral drugs.

Key Markets	Key Features
USA	Largest market for the company Introduced the first product in 1998 Sales of US$ 379 Million in 2006 2nd largest manufacturing hub for Ranbaxy with four manufacturing locations Robust product portfolio with a cumulative basket of 197 ANDAs with 121 approvals 10 product filings under U.S. President's Emergency Plan For Aids Relief (PEPFAR) in 2005 with 3 tentative approvals under PEPFAR in 2005
Germany	Sales of US$ 29 million (2006) Changing market environment due to government regulations on healthcare
UK	Sales of US$ 35 million (2006) Launched Ondansetron on day 1 of patent expiry Enhanced focus on branded business in Respiratory segment
France	Sales of US$ 69 million (2006)
Brazil	Sales of US$ 27 million (2006) 5 new molecules launched during 2006 5th largest generic company
Russia & Ukraine	Sales in Russia US$ 65 million (2006) Amongst top 10 foreign generic companies Zanocin OD ranked No.1 Ofloxacin
China	Sales of US$ 13 million (2006) Focus on patent protected products/ limited competition Change in business model to increase hospital reach
South Africa	Sales of US$ 24 million (2006) 5th largest generic company Acquisition of BE TABS

Footprints

Cipla's products are bought by over 170 countries across all the continents-US, Latin America, Europe, Australia, Africa, and Asia. Cipla has partnerships with nine companies for over 125 products.

Business Functions

- Active Pharmaceutical Ingredients/ Intermediates
- Generics
- Formulations
- Veterinary products
- Agrochemicals

Revenue & Growth

Cipla's turnover in 2007 was around US$ 800 million with a growth of 17 per cent over the previous year. Exports accounted for over 50 per cent of the overall sales.

The company has filed over 100 DMF registrations in the US and over 85 in Europe. They already have more than 5,000 approvals for formulations in South and Central America, the Middle East and Africa

NICHOLAS PIRAMAL INDIA LTD. (NPIL)

Introduction

NPIL is the flagship company of the US$ 500 million Piramal Enterprises (PEL), one of India's largest diversified business houses. NPIL came into existence in 1988 when it acquired Nicholas Laboratories from Sara Lee. It is India's 4th largest pharmaceutical company and is the leader in the CVS segment. In the past 15 years, the company has grown primarily through acquisitions, mergers and alliances.

Exports	
North, Central & South America	33%
Africa	28%
Europe	21%
Australasia	11%
Middle East	7%

Focus Therapeutic Segments

Antibiotics, neuropsychiatry, cardiovascular, diabetes, gastrointestinal, vitamins, neurology, inhalation anaesthesia, respiratory, pain management and dermatology

Footprints

To expand its global footprint and diversify and enhance its product portfolio, Nicholas Piramal has acquired a number of foreign and domestic companies. In 2003, it merged with Global Bulk Drugs and Fine Chemicals (India) to obtain access to the regulated markets of the United States, Europe and Japan. Nicholas Piramal acquired Pfizer's custom manufacturing plant located in Morpeth (UK) to supply more than 300 finished dosage forms to more than 100 markets, including the United States, Western Europe, and Japan.

Capabilities

The company is among the world's top 10 leading pharmaceutical outsourcing firms with capabilities across the entire Contract Research and Manufacturing Services (CRAMS) value chain. NPIL operates 7 APIs and finished dosage production facilities in India. The company's state-of-the art R&D facilities are in Mumbai and Chennai. NPIL has also emerged as one of the leading custom manufacturing organisations in the country.

Key Acquisitions and Alliances

In January 2007, Nicholas Piramal entered into a development agreement with Eli Lilly (US) to conduct non-clinical studies and human clinical trials. Thus it gained strategic entry into Pfizer's global sourcing network to become Pfizer's largest global contract manufacturing partner.

Nicholas Piramal acquired 51 percent equity stake held by Boots Company in the joint venture Boots Piramal Healthcare. It also acquired the Indian subsidiaries of F.Hoffman-La Roche (Roche), Boehringer-Mannheim, Rhone Poulenc, Hoechst Marrion Roussel research centre, ICI India's pharma division and Aventis' research facilities. It entered into joint ventures or marketing relationships with Boots Healthcare, F. Hoffmann-La Roche (Switzerland), Gilead Sciences (U.S.), Cheissi (Italy) Stryker Corporation, Allergan (U.S.), and IVAX (UK) for a wide range of products.

Revenue & Growth

For 2005-06, NPIL recorded a turnover of US$ 343.9 million and profits after tax were US$ 41.4 million. The domestic Indian market accounts for approximately 87 percent of the company's annual sales. Brands such as Phensedyl, Ismo, Supradyn, Gardenal, Stemetil, Haemaccel and Rejoint account for 67 per cent of the total revenue.

GLAXOSMITHKLINE

Introduction

GlaxoSmithKline is a leading, global, research-based healthcare and pharmaceutical company. In India, it is the number one pharmaceutical company with a market share of 6.45 per cent in December 2006. The company has two manufacturing units in India, located at Nasik and Thane. The company has a 2000-strong field and a nation wide network of over 4000 stockists, which ensures that the company's products are readily available across the nation.

Business Functions

The company has two main business segments in India, one is pharmaceuticals and the other is Qualigens Fine Chemicals (QFC). QFC has an estimated market share of 29 per cent in the laboratory chemicals market. The company also has a significant presence in the diagnostics business.

Revenue & Growth

Net sales of the pharmaceuticals business segment was US$ 327 million which constitutes 92 per cent of the company's total sales (excluding the AFC business).

Exports recorded a sales turnover of US$ 7.1 million, comprising of both bulk drugs and formulations. Exports of bulk drugs were to major markets including Japan, Mexico, France, Germany, Holland, UK, South Africa and Denmark. Formulations were exported to Sri Lanka, Myanmar and Vietnam.

Research & Development

The company has two R&D centres, which are approved by the Department of Scientific and Industrial Research, Government of India.

NPIL has developed a number of new products in the area of palatable liquid orals (aqueous and oily), as also topical steroid in emollient cream base. The R&D division of NPIL is also involved in collaborative development of new products along with leading pharma companies.

Future Outlook

The company will continue to lay emphasis on the key areas particularly on the development of new products such as multivitamin-multimineral in novel form, Cephalosporin formulations and line extensions and collaborative research work with other companies and GSK UK.

PFIZER

Introduction

Pfizer first came to the Indian market in 1950, through a company named Dumex Limited. The first production facility was set up at Darukhanna in Mumbai, where products such as Protinex and Isonex (isoniazid - an anti -TB drug) were manufactured. The company is headquartered in Mumbai and it employs around 2,000 employees across the country. The company has a state-of-the art manufacturing facility at Thane, Maharashtra.

Key Products

Pfizer has demonstrated tremendous faith in the potential of Indian pharmaceutical market. The company has launched 5 products since 2005 - Vfend, Viagra, Lyrica, Caduet and Macugen.

7 of Pfizer's brands feature among the top 100 pharmaceutical brands in India, while 2 of Pfizer brands, Corex (cough formulation) and Becosules (multivitamin), continue to rank as the No.1 & 2 brands amongst all pharmaceutical drugs sold in the country.

Revenue & Growth

Pfizer Limited (India) had a turnover of US$ 172 million (November 2006) and as of is one of the fastest growing pharmaceutical companies in India with a consistent 'higher than market' growth rate in 2006.

Globally it is one of the highest spenders in

pharmaceutical R&D. Pfizer has made clinical research investments of US$ 15.75 million in India and it is among the most respected MNC pharma companies in India.

Other Activities

1. Created the Academy of Clinical Excellence (ACE) in collaboration with Bombay College of Pharmacy to provide professional training to investigators and other clinical research personnel.
2. Pfizer has also partnered with other pharmaceutical companies, contract research organisations and investigators to establish Indian Society for Clinical Research (ISCR) – a professional society aimed at raising the standards of clinical research.
3. Pfizer Education And Research League (PEARL) is an initiative in which Pfizer seeks to partner with institutes to improve existing clinical research and continuing medical educational capabilities.

ASTRAZENECA

Introduction

AstraZeneca India Pvt. Limited (AZIPL) is an integral part of the global organisation with a mandate to discover new chemical entities for the treatment of infectious diseases of the developing world.

Business Functions

The company has R&D, manufacturing and marketing functions in the country with offices in Bangalore. The R&D facility in India has more than 90 scientists of international repute.

The company is in the process of adding a new state-of-the-art process R&D facility across 3.5 acres. It would house a team of upto 50 scientists.

Focus Therapeutic Segments

The company focuses on respiratory, maternal health, oncology infection, pain control and anaesthesia.

Revenue & Growth

Added a state-of-the-art process R&D facility employing more than 50 scientists. The company registered a sales turnover of US$ 62.9 million in 2006 with a Profit After Tax (PAT) of US$ 11.5 million

SANOFI AVENTIS

Aventis Pharma Limited was incorporated in May 1956 under the name Hoechst Fedco Pharma Private Limited. The company has around 1,840 employees in the country.

Business Functions

The company is engaged in the manufacturing and marketing of drugs and pharmaceutical products in the country. It has two state-of-the-art manufacturing facilities at Ankleshwar, Gujarat (chemistry and pharmaceuticals) and at Verna, Goa (pharmaceuticals). Both sites have been identified as global sourcing units.

Focus Therapeutic Segments

The key focus areas are cardiovascular disease, thrombotic diseases, metabolic disorders, oncology, disorders of the central nervous system, internal medicine and vaccines.

Revenue & Growth

The company registered sales of US$ 223 million for the year ended as of December 2006 with a net profit of US$ 40.3 million.

Key Opportunities

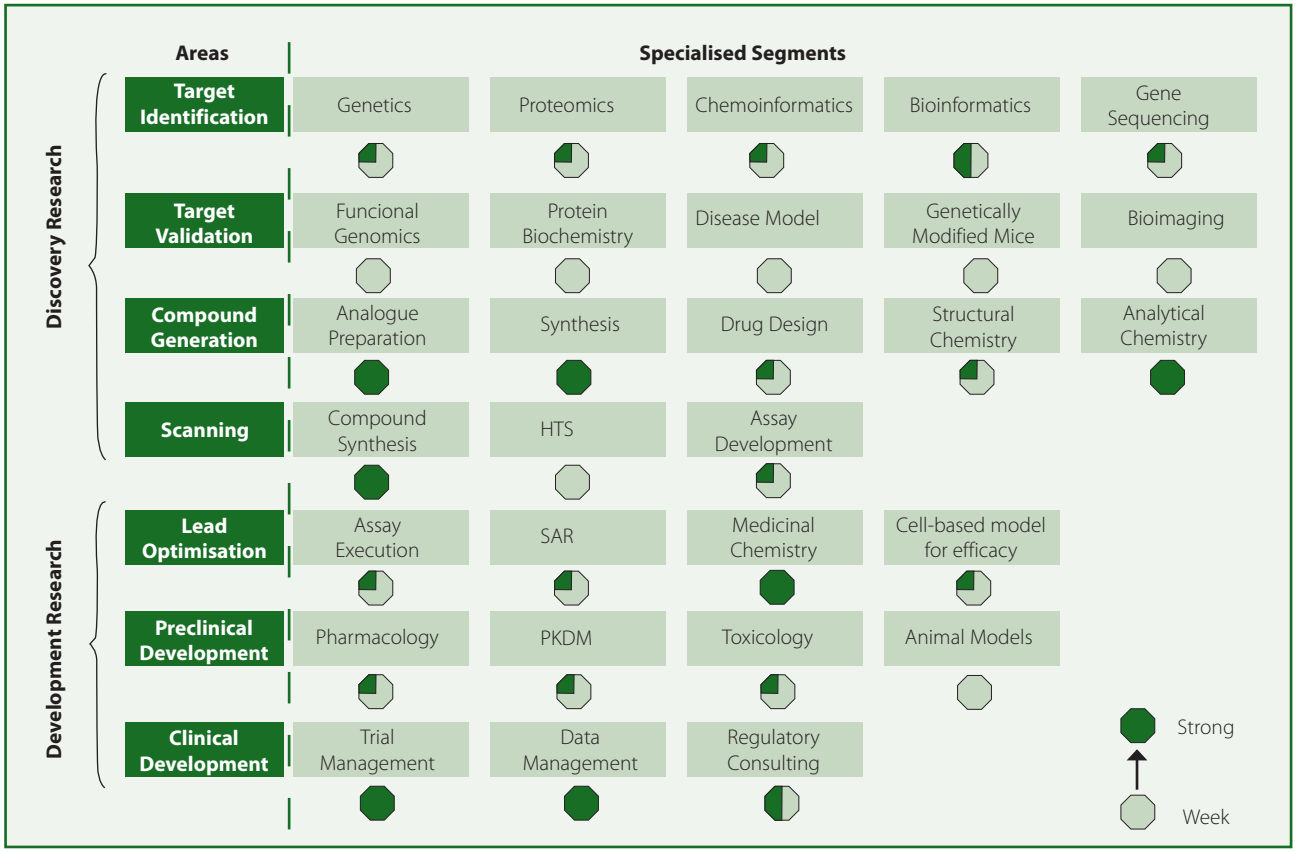
CONTRACT RESEARCH – INDIA AN EMERGING HOTSPOT

The Indian contract research outsourcing industry recorded a growth of 45 per cent to reach US$ 175 million in 2006, establishing the country's status of a preferred service provider. The trend of forging strategic alliances within the drug discovery and development arena is further gaining momentum and is an indicator of the move towards a preferred partner position.

Another major trend that has been witnessed is the enhanced level of investment in R&D capabilities and infrastructure by the industry and the Government alike.

Outsourcing R&D to India is increasingly being looked at as integral to the strategic decisions of innovators, indicating the sector's shift from a cost-driven, low-value service, to a research-driven, high value activity. In addition to conventional clinical research, the segment has expanded to include contract research for preclinical drug discovery.

Presently, a major portion of the services are limited to chemistry based lead identification/optimisation, preclinical and clinical research stages. However, there are a handful of companies that provide biology based services for target validation. Notable examples are Avesthagen,



Source: Offshoring in the Pharmaceutical Industry: Mridula Pore, Yu Pu, Charles Cooney, MIT, E&Y Analysis

Company	Services Offered	Clients
Advinus Therapeutic (Pune)	Drug discovery services, medicinal chemistry services, toxicology studies	Development projects for Merck
Avra Labs (Hyderabad)	Product chemistry, organic synthesis, chiral synthesis and technology	Top 20 big pharma and biotech companies
BioArc Research Solutions (Vadodara)	Medicinal chemistry services, custom synthesis and formulations, preclinical pharmabiology, BA/BE, CRAM	NA
Aurigene (Bangalore)	Lead generation and optimisation and early computational chemistry aided ligand design, mining and screening of novel chemical entities, thus providing direction for lead discovery and medicinal chemistry. Early animal work involving ADME and toxicity improves the probability of success	Collaborative discovery programmes with Novo Nordisk on diabetes and discovery services with Rheosciences, Denmark
GVK Biosciences (Hyderabad)	Medicinal chemistry services, Bioinformatics, clinical trials, custom synthesis and drug discovery services	Pharma/biotech companies across US, UK, Germany and Japan; Wyeth, Biogen, Merck & Co. (50 projects)
Hikal (Mumbai)	Medicinal chemistry services, custom synthesis , CRAM	5 pharma companies also work in agrochemicals
Innovasynth (Mumbai)	Medicinal chemistry services, custom synthesis, CRAM	Work for big pharma companies
Jubilant Organosys (New Delhi)	Bioinformatics, clinical trials, CRAM, medicinal chemistry services, custom synthesis and drug discovery services	60 clients/20 projects at any given time
Matrix (Hyderabad)	CRAM, medicinal chemistry services, custom synthesis and dossier development	Rigen Inc., GSK India, Merck KGaA
Procitius Research (Chennai)	Medicinal chemistry services, custom synthesis, biology services, clinical trials and CRAM	NA
Sai Life Sciences (Hyderabad)	Medicinal chemistry services, scale up services	200 projects for almost 30 MNC pharma and biotech companies
Shasun Chemicals & Drugs (Chennai)	CRAM, organic chemistry, medicinal chemistry services, custom synthesis and biology services like protein purification, microbial fermentation and process optimisation	NA
Suven Life Sciences (Hyderabad)	CRAM, medicinal chemistry services, custom synthesis and clinical trials (ACT and Sipra), drug discovery services	About 18-20 international clients from across US and Europe
Syngene (Bangalore)	Medicinal chemistry services, custom synthesis and drug discovery services, affiliate Clinigene	Novartis, Merck & Co.
TCG (Kolkata)	Silicogene, medicinal chemistry, drug discovery services	NA
Bharavi Labs (Bangalore)	Medicinal chemistry services, custom synthesis and drug discovery services	20-25 ongoing projects. Works on FTE and ongoing contracts

Source: E&Y Research

Ocimum Biosolutions and TCG Lifesciences. Though still at a nascent stage, these services are beginning to gain momentum. Bioinformatics companies that offer research enabling software technologies are also emerging as a valuable segment.

There is an increasing trend of Indian Clinical Research Organisations (CROs) becoming preferred vendors for outsourcing activities in the early drug discovery phase, with high margin contracts, such as researching and/or developing proprietary technologies for the client.

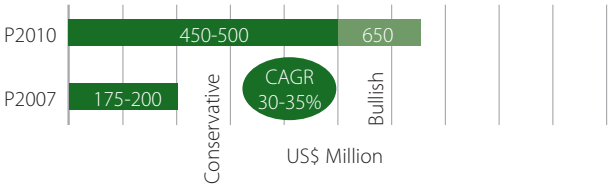
Estimates suggest that India has the potential to attract between 5-10 per cent of the global contract research outsourced market over the next five years. This includes chemistry services, toxicology services and clinical research activities. The said business would be US$ 0.8-1.7 billion by 2008 and US$1-2 billion by 2010. Approximately, 40-50 per cent of this would come from clinical research.

CLINICAL RESEARCH – LEVERAGING INDIA'S ADVANTAGE

India is rapidly gaining ground as the preferred destination for offshoring clinical research which primarily involves Phase II to IV trials and BA/BE studies for generic drugs, by pharmaceutical companies across the globe.

Clinical research market in India was estimated around US$ 200 million in 2006 and is expected to become US$ 400-500 million by 2010, moving at a high CAGR of 30–35 per cent. Presently, India constitutes less than 2 per cent of the global clinical trials market.

Forecasted Clinical Research Market



Source: Compiled from industry sources, P- Projected

Clinical trials for NCEs constitute around 60 per cent of the total revenue mix, while the rest 40 per cent is contributed by the BA/BE studies for generics development. However, in terms of volume, around 70 per cent of the work is directed towards generics research.

The market for BA/BE studies in India was estimated to be around US$ 60-70 million in 2006. It is estimated to reach US$ 150 - 200 million by 2010-11 growing at a CAGR of 18-20 percent.

At present, a majority of the clinical trials are being outsourced by the MNCs. Indian generics companies are the primary sponsors of BA/BE studies. However, in the future a significant portion of these studies are likely to be sponsored by global generics companies.

Eli Lilly, Pfizer and Quintiles were the pioneers to initiate clinical research activities in India around a decade ago. Since then, the number of CROs has increased to around 120.

Majority of these companies started off by offering bioequivalence services and then gradually expanded their operations into clinical research using their existing talent pool.

INDIA ADVANTAGE

Availability of subjects, investigators and sites

- Huge patient population, genetically distinct groups, specialty hospitals with state-of-the-art facilities, nearly 700,000 hospital beds and 221 medical colleges and skilled English speaking investigators are India's trump cards. By 2010, an estimated 2,500-3,000 GCP trained investigators are likely to be available in India
- India offers the ease at which subjects can be recruited and investigators and sites can be identified, which has tremendous impact on the speed at which a drug is marketed. The prevalence of diseases of both, the tropical and the industrialised world and the availability of treatment naïve patients allows for quick recruitment. Patients can be recruited 3-4 times faster for trials than in the traditional geographies in the West

Indications	Incidence
Cardiovascular Diseases	2 million deaths every year
Diabetes	An estimated 30 to 35 million diabetics in 2005
Cancer	2 million cases, 500,000 new cases detected each year
Infectious Diseases	Represent 51 per cent of deaths (HIV, malaria, tuberculosis, tetanus, diarrhea, acute respiratory infections etc)
Other Medical Conditions	40 million asthmatics, 1.5 million patients of Alzheimer's, 10 million with major psychiatric disorders

Source: E&Y Research

Cost Benefits

- The cost of conducting phase I trials in India is 50 per cent lower than the US$ 20 million required in the US and 60 per cent lower than the US$ 50 million required for the phase II study

Support services and infrastructure

- An integrated support infrastructure in the form of central reference labs, hospitals, courier services, etc. is essential for timely and successful completion of a trial. India has robust IT infrastructure and resources, coupled with well integrated central reference labs, medical facilities, etc.

Conducive regulatory policy and framework

- In 2005, Schedule Y of the Drugs and Cosmetics Act was amended. Now, parallel global clinical trials are possible in India. Permission is granted for concomitant phase II and phase III trials
- To provide impetus to this upcoming sector, clinical trials have been exempt from Service Tax in the 2006-07 Union Budget

CONTRACT MANUFACTURING

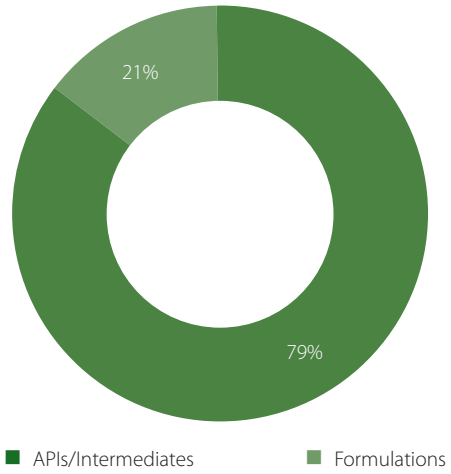
The global Contract Manufacturing (CM) market was estimated around US$ 15 billion in 2005. APIs/intermediates accounted for 67 per cent of this pie, while the rest 33 per cent was constituted by formulations. By 2010, the demand for contract manufacturing is estimated to be US$ 30 billion, while the share of formulations in this pie would increase upto 41 per cent.

Presently, India has a miniscule share of the global CM market, with estimated revenues of US$ 445 million in 2005. The market is estimated to increase to US$ 900 million to US$ 1 billion by 2010.

Presently, the share of finished products (formulations) in the total CM market in India is low, since majority of the demand comes from the APIs and intermediate segments.

However, given the Indian companies' significant investment in building internationally accredited facilities to deliver finished formulations, the demand for sourcing formulations from India is expected to grow at a higher rate. By 2010, the demand for contract manufacturing of formulations is likely to be around US$ 210 - 300 million. The APIs and intermediate demand is likely to be in the range of US$ 600-700 million by 2010.

Indian Contract Manufacturing Pie (2010)



Source: India Infoline

Key growth drivers

- Enactment of the Product Patents Act by the Government of India in 2005, has been the key step towards augmenting the confidence of global innovator companies
- Indian companies have been making large capital investment in creating world-class manufacturing setups with international accreditations
- Availability of high-end process chemistry skills has helped India position itself as a favourable destination for outsourcing manufacturing activities
- Moving over from the conventional outsourcing of APIs/ Intermediates, MNC pharma companies have begun to outsource formulations as well
- Ability of Indian companies to offer wide range of services across the entire value chain

ONCOLOGY – INDIAN PLAYERS EYEING THE GLOBAL OPPORTUNITY

The Indian pharma industry is gearing up to introduce oncology drugs in the international market. Treatment for cancer is likely to become a US$ 55 billion opportunity by 2009, from the current US$ 45 billion. Presently, cancer accounts for an estimated 7.6 million deaths globally.

The oncology pipeline is the richest in number and potential in value, with a large number of pharmaceutical and biotech companies focusing on oncology drugs. Over 50 new oncology products are expected to be launched in the next five years with new players entering the market. About 30 per cent of all launches by 2010 will be in oncology.

The global oncology drug market is growing at 17 per cent annually and the current size of the Indian cancer drug market is US$ 18.6 million and this is expected to treble by 2010.

Leading Indian pharma and biotech companies such as Biocon, Ranbaxy, Dr. Reddy's, Sun Pharma, Nicholas Piramal, Dabur and AstraZeneca have already made a market foray with a slew of drugs.

- Biocon recently launched its monoclonal antibody-based drug BIOMAb-EGFR for treating solid tumours. The company is looking at introducing products in the US and Europe
- Dabur Pharma introduced a nano technology-based chemotherapy agent, Nanoxel, in the country and plans to take it to the US and the European markets and has already planned clinical trials there
- Ranbaxy Laboratories Ltd. has entered into a strategic alliance with Zenotech Laboratories Ltd., wherein Ranbaxy would market the latter's oncology products in the global market

PHARMACEUTICAL RETAIL – EMERGING GROWTH SEGMENT

Despite retail revolution sweeping the nation, India's US$ 6 billion pharma retail has witnessed limited action in the past. Multinational pharmaceutical retail chains and large corporations have not evinced much interest despite immense untapped potential of organised retail in the pharmaceutical sector in the country.

Regulatory constraints have been cited as the key reason why big corporations have avoided this market. Current legislation limits foreign ownership of an enterprise to 49 per cent in the case of single brand products. In addition to that, margins offered to wholesalers and retailers are under control via the Drug Price Control Order (DPCO).

However, despite these constraints, various foreign retailers are actively pursuing joint ventures and franchisee agreements with local players to leverage the first mover advantage. Sensing the tremendous potential of organised retail, US retail major Wal-Mart, Boots and Asian retailer AS Watson are expected to soon make a major foray into the domestic market.

With revenues of US$ 130-140 million in 2006-07, organised retail constitutes just 2 per cent of the pharmaceutical retail market. However, it is expected to grow with a high Y-o-Y growth of 30-40 percent and is likely to become a US$ 400–530 million market by 2010. With the Government contemplating to increase the FDI cap to 51 per cent in the case of single brand product, the sector is expected to see major investment by foreign, as well as domestic companies.

Case Study: Reliance Retail

The Mukesh Dhirubhai Ambani Group, which is one of the leading industrial groups in the country is planning a foray into the pharma retail segment. This is part of an overall strategy for building super-malls in 21 zones across India. Through its biopharmaceutical venture, Reliance Life Sciences, the firm intends to fund the venture, targeting US$ 33 billion of the local market by 2012.

The company has allocated US$ 2.2 billion for setting up production facilities. The firm is further evaluating acquisitions of local drug producing units and companies to offer low margin drugs at the retail level.

Case Study: AIOCD (All India Organisation of Chemists and Druggists)

AIOCD is a leading industry association with a membership of around 600,000 retailers and wholesalers in the country. Sensing the imminent competition from the foreign retail houses and increasing threat from domestic companies entering into organised pharma retail, AIOCD has planned a foray into organised retail as a country strategy to protect the interest of small unorganised retailers.

AIOCD would facilitate the creation of a centralised procurement system and a Special Purpose Vehicle (SPV) network in each state. The strategy is to create a centralised procurement system by utilising the combined resources of 600,000 retailers and wholesalers, which are members of AIOCD.

A centralised procurement system is part of a general push by AIOCD towards a network of small pharma retailers, who have dominated the Indian market for decades. This initiative was test-piloted last year in Maharashtra, where the largest network of small pharma retailers exists.

Case Study: Ranbaxy/Fortis

Ranbaxy-backed Fortis Healthcare has announced its plans to enter the pharma retail segment, investing close to US$ 1.7 billion into the effort. This is part of Ranbaxy's latest attempt to diversify into associated segments of its main pharmaceutical business. So far, a private hospital group and the firm's pharmacy chain are major investments. Known as Fortis HealthWorld, the retail unit will promote products and services offered by both Ranbaxy Laboratories and Fortis Healthcare, a separate firm promoted by Ranbaxy's founder family.

Fortis will roll out 1,000 shops covering 400 towns across the country in five years. The first 250 of these are expected to be operational by the end of 2008. The company is touting the new venture as a one-stop shop for health services such as pathology testing and traditional medicine; the new outlets are further expected to stock drugs from other pharma firms.

Case Study: Zydus Cadila

Zydus Cadila plans to create a separate company from its health product lines. The first outlet of this new company would be commissioned in 2007. The company expects to enhance its product range by launching a smoking-cessation product and hopes to improve its revenues by close to 300 per cent to US$ 1 billion from the current US$ 266 million.

Current Player's Expansion Plans	
Pharmacy Chains	**Plans**
Apollo Pharmacy (part of the Apollo Hospital Group)	Presently has 450 pharmacies with 50 more to be added by the end of 2007
Subhiksha	Presently has 550 shops and expects to touch the 1000 mark by the year-end
Medicine Shoppe (part of Medicine Shoppe International Group)	To double the count to 250 by the end of 2007
Guardian Lifecare	Regional player with 65 pharmacies expected to increase to3,500 by 2015
98.4 degree	Has a presence of close to 60 outlets and plans to more than treble its count to 300 by the end of 2008

Source: Global Insight

RURAL MARKET - OPPORTUNITIES AT THE BOTTOM OF THE PYRAMID

Growth in urban markets reaching the plateau phase, coupled with intense competition, branded pharmaceutical marketing firms have been forced to adopt a long term view of rural markets as the sustainable growth option.

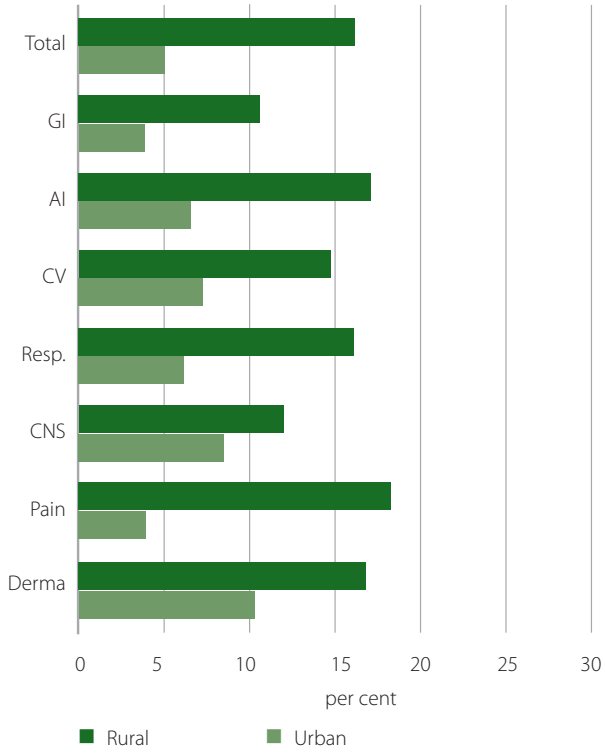
There is an immense growth potential in the rural market, as 65 per cent of the population still resides in these areas with limited or absolutely no access to medicines and other healthcare facilities.

With a growth rate of 39 per cent in 2006, growth in rural market has outstripped the growth in the urban region across most of the therapeutic categories in both value and volume terms.

Segments where prescriptions are general physician driven such as anti-infectives, pain, etc. have registered a higher growth compared to the specialist-driven segments such as CNS.

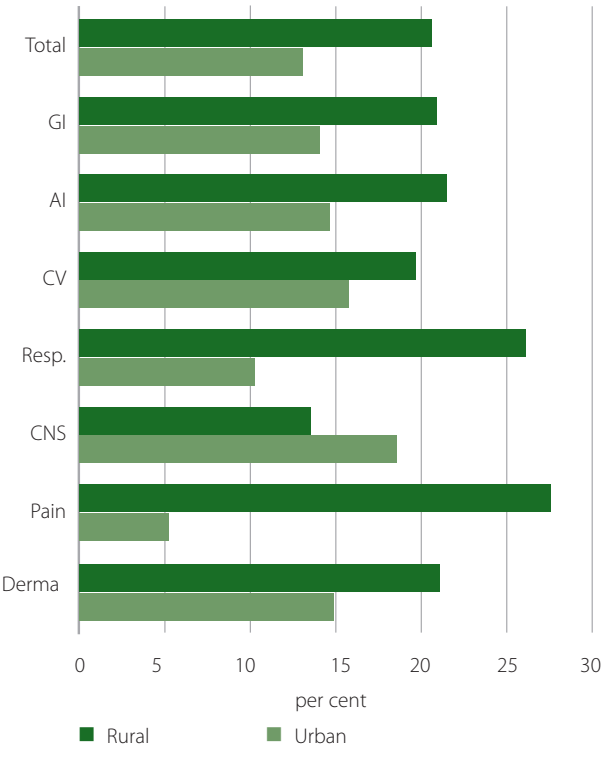
In rural areas, contagious, infectious and water borne diseases such as diarrhea, amoebiasis, typhoid, infectious hepatitis, worm infestations, measles, malaria, tuberculosis,

Volume Growth in the Pharma Market (2005-06)



Source: Enam

Value Growth in the Pharma Market (2005-06)



Source: Enam

whooping cough, respiratory infections, pneumonia and reproductive tract infections continue to dominate the morbidity pattern.

However, non-communicable diseases such as cancer, blindness, mental illness, hypertension, diabetes, HIV/AIDS, accidents and injuries are also on the rise.

A study conducted by the George Institute for International Health in 45 villages in east and west Godavari districts of Andhra Pradesh confirms the rising incidence of lifestyle diseases in rural areas. CVS diseases such as heart attacks and stroke caused 32 per cent of the deaths in this region.

Death from injury (self-inflicted injury, falls, etc) was the second most common cause (13 per cent). Infectious diseases, such as tuberculosis, intestinal infections and HIV/AIDS were responsible for about 12 per cent of deaths, just ahead of cancer that caused 7 per cent of deaths.

Despite the pertinent issue of logistics and distribution infrastructure, rural markets presents lucrative opportunities for pharma companies, both large and medium size.

BIOPHARMA – DOMESTIC PLAYERS EYEING THE GLOBAL BIO-SIMILAR MARKET

Leading Indian companies are intensifying their focus on the biotech segment as they see it as the potential growth segment for future. Presently, one in four drugs under development is a biologic. Sales of biological drugs are estimated to reach US$ 52 billion by 2010. Moreover, Indian players are also eying the huge opportunity presented by biosimilars across the globe.

Key initiatives of Indian companies:

- Ranbaxy Laboratories have signed a development and marketing agreement with generic injectables company Zenotech Laboratories to produce its first biosimilar G-CSF
- Reliance Life Sciences has bought 74 per cent stake in GeneMedix. The joint entity will develop biosimilar drugs and offer full service in CRAM
- DRL has created a copy of Roche's Rituximab which is used to treat non-Hodgkin's lymphoma which generated more than US$ 2 billion last year. Marketed by Genentech Inc. and Biogen Idec Inc. as Rituxan in the US
- Reddy's sell Grafeel, or filgrastim in India, which is used to boost white blood-cell production and is marketed by Amgen in the US
- Glenmark has set up a biologics research facility in Switzerland with more than 25 European scientists. It expects first biological lead to enter into clinics in 2009 and two more by 2010
- Glenmark tied up with US based Dyax to expedite biologics research. Dyax will perform funded research for three of Glenmark's targets in the areas of inflammation and oncology
- Biocon has started clinical trial on Insugen, BIOMab-EGFR trials in the regulated markets

A legal framework for biosimilars has been established in the EU and the first few biosimilar products were approved by the European Commission in April 2006.

Leading Indian pharmaceutical companies such as Biocon, Ranbaxy, Dr.Reddy's, Wockhardt, Glenmark, etc. have invested in manufacturing facilities for biosimilars. Some of them have already launched products in lessregulated markets and hope to cash in on the opportunity as the US is expected to establish an approval framework for biosimilars.

Exchange Rate of US$ 1 = INR 41 has been used throughout this report.

DISCLAIMER

India Brand Equity Foundation (IBEF) is a public-private partnership between the Ministry of Commerce & Industry, Government of India and the Confederation of Indian Industry. It aims to effectively present the India business perspective and leverage business partnerships in a globalising market-place.

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