INSEAD

Ranbaxy Laboratories Limited: At the Crossroads

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This case was prepared by Swati Srivastava, Research Associate, under the supervision of Amitava Chattopadhyay, the L'Oréal Chaired Professor of Marketing-Innovation and Creativity, both at INSEAD, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. We would like to thank Mr. Ratish Trehan of Ranbaxy Laboratories Ltd for his help and support throughout the development of this case. Financial support from R&D INSEAD is also gratefully acknowledged.

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It was July 2001. Davinder Singh Brar, CEO and Managing Director of Ranbaxy Laboratories Limited, reflected on the paradigm shift in the pharmaceutical industry and the challenges it brought with it. With the advent of the World Trade Organisation (WTO) regime on the horizon, Indian companies would have to comply with international patent legislation, including the recognition of product patents, and thus no longer be able produce patented drugs at will. Ranbaxy, a major player in the Indian generics drug market, was seeing its domestic share eroded by intense competition. The company was contemplating several options to stem the tide. One was the launch of ciprofloxacin 'one-a-day' (Cifran OD) in India, an antibiotic based on the company's breakthrough technology and potentially a key part of its strategy to revitalize growth. Dr. Brar wondered whether Ranbaxy should move ahead with the launch and, if so, how the drug should be marketed.

The Pharmaceutical Industry

Players in the pharmaceutical industry can be classified as follows: original research companies (ORCs), generic companies, and specialty-pharmaceuticals. ORCs are research-driven, focusing on discovering new drugs known as New Chemical/Molecular Entities (NCEs/NMEs). These companies, mainly based in the US and Western Europe, make multi-billion dollar investments in research, seeking large returns on their products. ORC's follow a high-risk/high-return strategy. According to industry spokespeople, developing a new drug takes 10 to12 years of research, strict regulatory approvals, and investments to the tune of US$500 million. Margins on new patent-protected drugs, however, can be as high as 90%.

Generic companies derive their sales revenue from off-patent drugs - competing versions of patented brands that are bioequivalent but marketed at a significant price differential (approximately 30% less). They are either sold by the chemical name of the molecule ("generic-generics") or under a brand name created by the generic manufacturer ("branded-generics"). In markets like India that do not recognize product patents, the entire market is made up of branded-generics, generic-generics, or both. Whether a drug is a generic is determined by its status under the patent law of the country concerned. The same drug could be a generic in the US and a patented product in Germany, depending upon the date of expiry of the patent in that country.

The third category of companies, specialty pharmaceuticals, develop niche drugs that are relatively more difficult to formulate or manufacture and involve significant regulatory approval challenges. Their profit margins are higher than that of a typical generics company because of technological barriers to entry and fewer rival suppliers.

Indian Pharmaceutical Industry: Structure and Dynamics

The Indian pharmaceutical industry is predominantly a branded-generics business characterized by low prices, intense competition and a high level of fragmentation. It is also one of the fastest growing sectors of the economy. India is the 14th largest market in the world in terms of value and the 4th largest by volume. The size of the market increased from

Rs.4 billion in 1971 to Rs.200 billion in 2000,[1] at a compound annual growth rate of 16.4%.[2] The organized sector accounted for Rs.150 billion, of which the top 10 players accounted for approximately 40% of market share.

The industry is highly fragmented: out of 23,000 units there are about 260 large units, which represent the organized sector, and more than 8,000 small and medium scale units that form the core of the industry. A wide product range of over 100,000 drugs exists including vitamins, antibiotics, anti-bacterials and cardiovascular drugs.[3]

Industry output can be divided into two categories: bulk drugs and formulations. Bulk drugs are active ingredients with medicinal properties and used in making formulations. Formulations are sold in various forms including syrups, injections, tablets and capsules. The formulations market in India is characterized by 30 to 50 brands for any given product. As would be expected in a branded-generics market, it is also characterized by rapid and steep decreases in price as competition increases. While cost is an inherent advantage to Indian firms, profitability in absolute terms depends on volume. Thus, firms aim at being the first to launch a generic product or being amongst the first to enter the market.

India has achieved self-sufficiency and global recognition as a low-cost producer of high-quality bulk drugs and formulations. It is one of the top five manufacturers of bulk drugs and among the top 20 pharmaceutical exporters in the world. Most of the players in the unorganized sector are involved in formulations manufacturing, since it is not technology-intensive and caters to local demand, based on price.

Key Competitors

The Indian pharmaceutical market comprises both multinational (MNC), as well as domestic companies. Historically, domestic firms have outperformed MNC's in the ethical and over-the-counter (OTC) sector, due to lack of product patents, a high level of fragmentation and low prices. However, the prospect of a changed patent regime *(*see below, *Impact of the New Patent Regime)* combined with the scaling-up of MNCs through a series of mergers in the late 90s, was beginning to cast a shadow over the future of Indian firms.

There are four MNCs in the top ten in the Indian market, accounting for 16% of the market (See Exhibits 1 & 2 for information on competition). In 2001, Glaxo, at number 1, had a market share of 6.53%. Cipla, a domestic player, was 2nd with a 4.99% market share. Ranbaxy commanded the 3rd largest share (4.8%) and had an expanding international portfolio (Exhibit 3 provides its financial statement). Cadilla ranked 4th and Nicholas Piramal 5th, with market shares of 3.79% and 3.46%, respectively.

1 The exchange rate in late 2002 was approximately €1 = US$1 = Rs.48.

2 The market had recently experienced a slowdown in growth to 8-10%, from mid-teens in the 1990s.

3 http://www.abnamroindia.com/Research/pdf/pharma-indy-rep-new.pdf

Industry Evolution

The Indian pharmaceutical industry was highly import-dependent from the 1950s to the early 70s. The 1970s saw two major developments: the Process Patent Act of 1970 and the Price Control Act of 1979. The introduction of the Process Patent Act required Indian firms to recognize international process patents but did not recognize product patents, giving Indian firms license to reproduce patented foreign drugs as long as they were produced in a novel way. This encouraged them to reverse-engineer imported drugs rather than develop new ones. As a result, companies were able to launch products locally long before the product patent expired, and build brand equity and a robust pipeline of products. The second piece of legislation, the Price Control Act, regulated the price of products in this sector. By capping prices for drugs in India, the government severely restricted the profit and growth prospects for both the domestic and foreign pharmaceutical firms in India.[4]

In the 1990's, however, fundamental changes occurred as India prepared for full membership of the WTO by 2005. This required Indian companies to comply with international patent legislation, including the recognition of product patents. Thus, Indian companies would no longer be able produce patented drugs and market them without license from the patentee.

Impact of the New Patent Regime

In preparing to meet the challenges of a product patent regime, the industry underwent a paradigm shift**.** Visible signs of this were increased interest shown by global pharmaceutical majors in the Indian market and heightened activity of domestic players to capitalize on the available window of new product opportunities. The latter led to a rash of new formulations, sometimes as many as 10 during a single month. The Indian market also experienced consolidation through mergers and acquisitions on the one hand, and strategic alliances for joint marketing of products on the other, with a view to gaining further access to new products and brands, increasing geographical coverage, better utilizing the sales force and sharing resources.

With the knowledge that compliance with the product patent regime was imminent, it became essential for Indian companies to invest in R&D to survive. Bigger players went in aggressively for R&D, spending on average 4% to 5% of their turnover (Exhibit 4).[5] Investment in R&D rose steadily: from Rs.2.2 billion in 1997-98, R&D expenditure rose to Rs.2.60 billion in 1998-99, and to Rs.3.2 billion in 1999-2000. R&D spend accounted for 2% of the pharmaceutical industry's turnover and was estimated to rise to 5% by 2005. However, this was low by global standards, where the pharmaceutical industry was estimated to have invested $44 billion on R&D in 1999-2000 with major players spending 15% to 20% of their turnover on R&D (Exhibit 5).

4 LBS Case Study 1999: Ranbaxy Laboratories Limited: From Vision to Action p. 285

5 R&D costs were low in India. The Investigational New Drug stage cost $100-150 million overseas but only $ 10-15million in India. Clinical trials in India cost ~$25MM compared $300-350MM abroad.

Market Characteristics

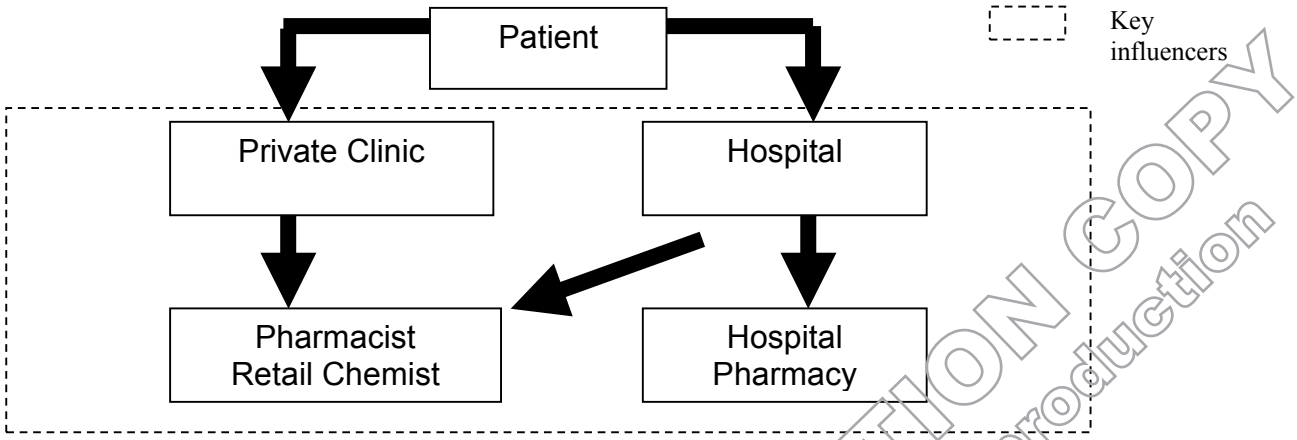
India's disease profile was typical of a developing economy with anti-infectives taking a major share of the market. However, changing demographics were re-shaping this profile. So, too, were lifestyles, especially in urban areas (representing 80% of total consumption), characterized by increased consumption of western food, more sedentary lives and rising stress levels. Anecdotal evidence suggests that Indians were getting chronic diseases like diabetes and cardiovascular diseases at a younger age. Increasing urbanization, without adequate planning, intensified pollution, triggering an exponential rise in respiratory tract infections. Conversely, the anti-infective segment suffered a decline due to improvements in sanitation and increased availability of cleaner water supplies. Thus, there was a change in the pattern of demand in favor of chronic segments.[6]

Customers

Customers can be classified as follows: consumer/prescription, institutional, and industrial. The consumer/prescription market consists of individuals and households who visit a doctor for treatment of their ailments. The institutional market is made up of large hospitals in the public and private sectors who buy products for distribution to their patients. The industrial market is comprised of pharmaceutical firms that buy bulk drugs used in formulations.

For the consumer segment, the characteristic feature of pharmaceutical marketing is that the end consumer, the patient, is reached through an intermediary, the doctor, who advises the patient through a prescription (Figure 1).[7] It is common practice for doctors to prescribe a specific brand rather than a formulation. However, when receiving prescriptions, it is common for pharmacies to provide substitutes such as the unbranded generic version of the drug, particularly when treating common ailments like coughs and colds.

Figure 1: Pharmaceutical Marketing Chain for Consumers



6 UBS Warburg: Indian Pharmaceuticals 8th October 2001 p. 41-42

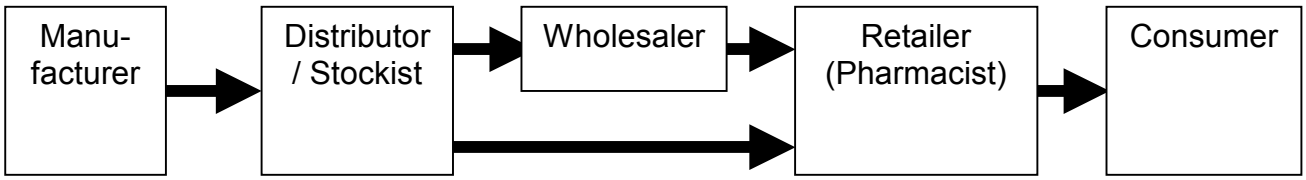
7 www.projectshub.com/projects/11007/11007a.htm

Indian consumers are price sensitive and prefer formulations that provide treatment at the lowest possible cost as buying power is low (per capita income on a PPP basis is US$2,340),[8] and unlike in Europe, there is no social security. Insurance is uncommon in India: 82% of total annual expenditure on healthcare is self-sponsored. Employers account for 9% of healthcare expenses and insurance covers a paltry 5%. There are only 2 million healthcare policyholders in a country of 1 billion; in the US, three out of four people carry health insurance.

Distribution

The consumer and the manufacturer are situated at two ends of a chain consisting of the distributor/stockist, wholesaler, and retailer (Figure 2). The manufacturer is usually the supply source to the distributor/stockist, who supplies to the retailer. The retailer is the most important link in the distribution chain, since prescriptions are converted into sales at this point.[9] While the doctor could be influenced to prescribe a particular brand, it is important to ensure brand availability at retail level to capture the sale and to ensure that the retailer does not substitute the brand prescribed by the doctor with an alternative of the same formulation.

Figure 2: Distribution



The distribution task is complex with there being 240,000 pharmaceutical retailers and approximately half a million doctors in India. For branded generics, retailer margins range from 16% for a DPCO [10] (Drug Price Control Order) controlled molecule, to 20% for a non-DPCO controlled one. The retailer enjoys higher margins on generic-generics as s/he has exclusive influence and is free to substitute them.

Ranbaxy Laboratories Limited

History

Ranbaxy traces its roots to 1962, when the Bhai Mohan Singh family of New Delhi entered a collaboration agreement with Lepetit SpA (Milan), then patent holder of the typhoid drug

8 World Bank's *World Development Indicator* (2002)

9 www.projectshub.com/projects/11007/11007b.htm.

10 DPCO controls the domestic prices of major bulk drugs and their formulations.

chlorophenicol, which Lepetit wanted to produce in India. A change in Lepetit's strategy prompted the family to buy them out in 1967.

The company took full advantage of the Indian Patent Act of 1970 and began a major investment program in the early 1970s that included the construction of a large pharma actives (API) manufacturing plant, initially producing actives for the Roche tranquilliser, diazepam. This vertically-integrated manufacturing capability reduced costs and increased its speed to market. In short order, the company created a strong position for itself in the anti-infectives segment of the Indian market with the introduction of Calmpose, an anti-depressant. In 1973, Ranbaxy went public.

Drug price controls during its early years deprived Ranbaxy of the incentive to invest in research. This, coupled with domestic bureaucratic obstacles, pushed Ranbaxy to expand outside india. An export drive in the 1980s improved margins and secured an entry into several international markets. It started exporting active pharmaceutical ingredients and dosage forms to some countries and built a formidable capability in reverse engineering. For example, in 1985 Ranbaxy found a novel way to manufacture ranitidine, the generic of Glaxo's Zantac, an anti-ulcerant and the world's best-selling drug. In 1992, it achieved international recognition with the development of a non patent-infringing process for the antibiotic cefaclor.

Ranbaxy soon became the country's largest manufacturer of antibiotics/antibacterials. It became the leading player in India's massive, low-cost medicine industry quietly churning out low-cost copies of Western drugs for 38 years.

Ranbaxy's tryst with globalisation began in 1993 when the company's top management came up with a mission statement that articulated its desire to become a "research-based international pharmaceutical company," and set a turnover target of US$1 billion by 2004. The mission statement took into account the changing contours of the domestic pharma industry as a result of the product patent regime that was to come by 2005, prompting the company to start investing in R&D to develop its own molecules.

From the mid 1980s through the early 90s Ranbaxy had focused strongly on chemical synthesis of known compounds, developing novel alternative processes for manufacturing them and formulating drugs mainly for the Indian market. The company's new strategic intent was to ascend the research value-chain (Exhibit 6) and, accordingly, it began to establish capabilities in the areas of discovery research, delivery systems, and clinical research. The thrust on New Drug Development Research (NDDR) and New Drug Delivery System (NDDS) research, in addition to reverse engineering for generic products, presented a huge upside potential for the company in the form of licensing and royalty income. However, Ranbaxy had no prior experience in basic R&D and building a strong, well-focused, interdisciplinary research team posed a major challenge. After obtaining a critical review of its R&D competencies, it decided to adopt a two-stage approach with the development of NDDS platforms as a stepping-stone to the development of NDDRs.

Ranbaxy in 2001

Ranbaxy was the third largest pharmaceutical company in India and one of the more vertically-integrated generic drug companies. It had also grown horizontally through the

acquisition of brands from Gufic Healthcare, a leader in antibiotics, and companies like Croslands Research Laboratories and Vorin Labs. It ranked among the top 100 pharmaceutical companies in the world and 11th amongst generic companies. Its global sales in 2001 were approximately $600 million, with almost 75% of revenue coming from formulation sales and 21% from bulk drug sales. Indian dosage form sales accounted for 30% of its global turnover.

In the domestic market, Ranbaxy had four brands in the top 25 (see Exhibit 7). Together these brands - Roscillin, Cifran, Revital and Sporidex - accounted for 30% of formulation turnover. In recent years, domestic sales growth had slowed due to high exposure to the anti-infectives category (43% of sales) - a mature category characterized by intense price competition and many generic players. The older products (more than 10 years old), which contributed around 48.2% of Ranbaxy's turnover, were also a cause for concern, registering a sales decline of 7% (Exhibit 8). Thus, over the past few years the company had been making a conscious effort to increase its presence in the high growth chronic segments.

Marketing

The company marketed anti-infectives, gastrointestinal (GI), orthopedic, nutritional, analgesic, cardiovascular (CVS), anti-diabetic, central nervous system (CNS), respiratory, and dermatological products (Exhibit 9). It was represented in India by its eight marketing arms (Exhibit 10): Pharma, Stancare, Croslands, Rexcel, Solus, Rextar, Blue R, and Super Specialty. Pharma concentrated predominantly on four therapeutic segments: anti-infectives, gastrointestinal, nutritionals, and pain management. Stancare offered products for a wide range of therapies targeted at both specialists (cholesterol reducers, anti-hypertensives, anti-diabetics, premium anti-bacterials) and general practitioners (cough relief, antibiotics). Croslands offered a wide range of products to dermatologists and orthopaedics. Antibiotics dominated the portfolio of Rexcel. The strategic intent of Solus was to become a CNS-focused company. Rextar had a portfolio of 19 products from various therapeutic segments such as the gastro-intestinal, anti-microbials, cardiovascular, anti-allergics, and anti-inflammatory agents, targeted at interior markets. Blue R was dedicated to generics and Super Specialty concentrated on AIDS and oncology.

Each marketing division had its own salesforce of medical representatives who called on doctors and pharmacies. Doctors were segmented according to their prescription-writing behavior. Medical representatives called two to three times a month on the top 25% who were high prescription writers for either the relevant Ranbaxy brand or the category, and on the remaining doctors in their area once a month. Pharmacies were also segmented by sales volume in three segments. Medical representatives visited 10-15 pharmacies daily and called on the high volume outlets more often. Each medical representative also covered a stockist or wholesaler in his area.

Cifran

Ranbaxy was traditionally known, as the 'House of Antibiotics'. The company commanded a leadership position in the cephalosporins and quinolones segment of anti-infectives. Quinolones included preparations like ciprofloxacin, ofloxacin, levofloxacin, pefloxacin, and lomefloxacin (Exhibit 11).

Ciprofloxacin was originally developed by the German multinational, Bayer AG, and internationally was used to treat urinary and respiratory tract infections, in particular acute exaggeration of chronic bronchitis (AECB). AECB patients typically took ciprofloxacin for 14 days. In India, it was used predominantly in fever, gastro-intestinal infections and urinary tract infections (Exhibit 12) when patients took two ciprofloxacin (250mg or 500mg) tablets/day for seven days.

Cifran (ciprofloxacin), launched in 1989, was the key brand in the anti-infectives portfolio of Ranbaxy. Pharma, the largest marketing division of Ranbaxy, marketed the drug which rose to become the number 1 brand in the quinolone category in a very short time. It became the most accepted antibiotic/anti-bacterial product in this fast-growing category, putting it amongst the top 10 brands in the country. Among the domestic pharmaceutical companies which also manufactured branded ciprofloxacin were Cipla and CHL. In 2001, Cifran was the market leader with a share of 19.5% (Rs.590 million) followed by Cipla's Ciplox with a 13.3% share of the Rs.3 billion ciprofloxacin market (Exhibit 13).

However, of late Cifran's aggressive revenue growth had slowed significantly and actually recorded a decline of 2.5% in 2000-01. There were several reasons for this. First, Cifran was facing stiff competition from generic-generics. The ciprofloxacin market was fast maturing. Newer quinolones like sparfloxacin, ofloxacin and gatifloxacin, were targeting the same segments as ciprofloxacin. Also, there was severe price competition; - smaller players were selling their drugs at almost half the price of Ranbaxy (Exhibit 14). Finally, there was a growing belief among some doctors that, after 12 years on the market, bacterial resistance to ciprofloxacin was high and it was no longer as effective as before.

Evolution to One-a-Day

Research into novel drug delivery systems aimed at devising more convenient modes of conveying drugs into the body, simultaneously reducing side effects and facilitating administration. Novel drug delivery systems provided an opportunity in terms of having a shorter product development cycle as well as opportunities for brand marketing and licensing that helped extend the product life-cycle.

Ranbaxy had developed four patented technologies in oral controlled release systems. In 1999, it achieved a technological breakthrough which made possible a one-a-day (OD) version of ciprofloxacin. This meant that instead of taking two tablets of ciprofloxacin 500mg, the patient would take just one 1000mg tablet of the controlled release form. Thus, the new formulation offered patients convenience and easier administration, potentially leading to higher compliance. In September 1999, Ranbaxy licensed the OD formulation of ciprofloxacin to Bayer AG for an initial payment of US$65 million. Bayer received worldwide marketing rights, with the exception of India and certain other markets, like the CIS.

The BIG Marketing Question

While Cifran OD was a technological breakthrough, it presented a significant marketing challenge. Although it offered the patient convenience, would the market value such convenience? Pharmaceutical and medical circles were increasingly doubtful about the

market success of one-a-day brands citing patients' unfounded skepticism about the effectiveness of the cure if they just took one tablet. Prior OD launches had failed because they were not valued by doctors, who, along with their patients, were concerned about therapies that provided the lowest cost for the treatment.

Also, was there a market for an OD form of an existing drug? If Ranbaxy went ahead with the launch, it would be the first time that a drug company had launched an OD version of an existing brand in India. The few OD successes had occurred for formulations where the OD form was essential due to the intrinsic properties of the formulation. The company faced threats from next generation flouroquinolones that were constantly entering the market and were already in OD form (e.g., doxycycline, sparfloxacin and levofloxacin. In such a context, would Ranbaxy be better off not experimenting with its flagship brand? Would it not be wiser to explore the potential for an OD launch using smaller market share molecules like Zanocin, which, with revenues of Rs.175 million, was roughly a third the size of Cifran?

If Ranbaxy went ahead with the launch, other brands of ciprofloxacin and Ranbaxy's own twice-a-day Cifran would compete in the same market. To avoid the danger of cannibalizing the mother brand, the company could opt to withdraw Cifran and market the OD formulation alone. Alternatively, did a possibility exist for maintaining both brands, each with a distinct positioning and identity and, If so, should the doctor selection, indication focus and promotional mix be the same or different? Ranbaxy had invested heavily to develop the OD platform and was concerned as to how to price the brand to recover its investment. Indeed, the whole marketing question was vexing since Indian regulations did not permit the marketing of prescription products directly to the end consumer.

Initial market research findings were mixed. On the one hand, there seemed to be strong support driven by a patriotic fervor among doctors and pharmacists, stemming from the fact that Cifran OD was the first drug based on world-class technology developed by an Indian pharmaceutical company. Indeed, Ranbaxy had sold the technology to Bayer AG, the original inventor of ciprofloxacin. On the other hand, market findings indicated that since it was not a ground-breaking innovation, i.e., Cifran and its competitors offered the same therapeutic benefits, the company might not be able to sustain the momentum in the market once the patriotic fervor died down.

If Cifran OD was launched, how should the drug be marketed? Should it be launched through one or more of the eight in-house marketing divisions? Alternatively, some in Ranbaxy favored co-marketing of the drug with other firms in the industry. The danger of promoting in-house was that the time-window provided by the fervor for Cifran OD might not be long enough for it to become entrenched, particularly given the stream of newer flouroquinolones entering the market. Further, if Ranbaxy went alone, competitors could use pricing strategies to reduce its market penetration, or try to undermine the value of an OD formulation, preventing Cifran OD from becoming an established product. This would be a severe setback given Ranbaxy's huge investment. Depending on this decision, it might have to choose with whom to co-market.

Ranbaxy had to make these decisions soon. Time-to-market was critical. One manager's remark summed up the situation, "we are losing our domestic market share by the day!"

Exhibit 1

Top 20 Players in the Indian Pharmaceutical Industry

Rank 2000	Rank 2001	Company	Market Share % 2000	Market Share % 2001	Growth % Yoy
1	1	GlaxoSmithKline	6.90	6.53	3.9
3	2	Cipla	4.69	4.99	16.8
2	3	Ranbaxy	4.90	4.80	7.5
4	4	Zydus Cadilla	4.00	3.79	4.2
6	5	Nicholas Piramal	3.51	3.46	8.0
5	6	Pfizer Parke Davis	3.53	3.34	3.9
10	7	Sun	2.50	2.77	21.7
7	8	Abott	2.81	2.75	7.3
8	9	Aventis	2.77	2.72	7.8
9	10	Dr Reddy's	2.67	2.66	9.4
12	11	Alkem	2.06	2.23	18.5
13	12	Lupin	2.05	2.15	15.2
11	13	Wockhardt	2.24	2.14	4.8
14	14	Novartis India	2.04	2.07	11.4
16	15	Aristto Pharma	1.97	2.03	12.8
18	16	Torrent	1.79	1.89	15.6
15	17	Cadilla Pharma	2.02	1.82	-0.8
20	18	US Vitamins	1.58	1.78	23.1
17	19	Alembic	1.92	1.78	1.7
21	20	Uni Chem	1.47	1.59	18.8

Exhibit 2
Profile of Key Players

Firm	Thumbnail Sketch	Key Product Groups (% contribution)	Sales Force Size
Glaxo (MNC)	A 51% subsidiary of Glaxo-Wellcome of UK. India's top ranking company. Its main presence is in corticosteroids, anti-infectives, and anti-ulcer & vitamin formulations. The company commands market-leadership in 80% of the therapeutic segments in which it operates. It has 20 brands amongst the top 250 brands in the domestic market and enjoys a market share of 6.5%	• Anti-infectives (19%) • Nutritionals (16.4) • Dermatologicals (14.7%)	1700
Cipla (Domestic)	A domestic player is the no.2 pharmaceutical company and commands a 5% market share. It has excellent R&D capability and a strong distribution network. The company is a player with strong process reengineering skills with strengths in the antibiotic, quinolone, and anti-asthmatic therapeutic segments**.** In anti-asthmatics, it has around 70% market share with its *Asthalin* brand.	• Anti-infectives (26.8%) • Anti-Asthma (21.4%)	1400
Ranbaxy (Domestic)	Commands the third largest market share (4.8%) and has major strengths in anti-infectives, dermatology, gastro-intestinal tract, central nervous system, orthopedics, and cardiovascular. It has an expanding international portfolio with business operations in 40 countries and manufacturing in six.	• Anti-infectives (42.8%) • Nutritionals (16.4%)	1650
Nicolas Piramal (Domestic)	Nicolas is known mainly for its growth by mergers & acquisitions. It has a major presence in anti-bacterial, CNS & CVS-diabetic segments. Its R&D facility (acquired from Hoechst Marion in FY99) is one of the best centers in India.	• Cardiovasculars (18.2%) • Anti-infectives (15.1%) • Cough & Cold (11.4%)	1100
Wockhardt (Domestic)	A research and technology oriented pharmaceutical company, ranked 13th in India, with a market share of 2.14%. The company has developed leading brands in anti-infectives, pain and inflammation, cough, psychiatry, medical nutrition, and biotechnology segments.	• Nutritionals (19.7 %) • Anti-infectives (14.3%) • Gastro Intestinals (9.2%)	760
Dr. Reddy's Laboratory Ltd. (Domestic)	The company has begun operations as a producer of bulk drugs such as ibuprofen and erythromycin, and has successfully leveraged its skills at reverse engineering and low production costs. It is among the largest producers of bulk drugs, such as enalapril maleate, ciprofloxacin, norfloxacin, amlodipine, and omeprazole. It is a key player in the anti-ulcerant, pain management, cardio-vascular, and anti-bacterial markets in the country with a market share of 2.66%.	• Gastro Intestinals (18%) • Cardio Vasculars ((16.8%) • Orthopaedics (16.5%)	950

Exhibit 3
Financial Results-Ranbaxy

Unaudited Financial Results (Provisional) for the three months ended 31st March 2001

Rs Millions

Particulars	Three months ended			Year ended
	31/03/2001	31/03/2000	Percent Change	31.12.00 Audited
Net Sales	**4,457**	**3,756**	**18.7**	**17,459**
- Domestic	2,184	2,001	9.1	9,347
- Exports	2,273	1,755	29.5	8,112
Other Operating income	**128**	**66**		**427**
Interest Income	**26**	**182**		**721**
Other Income	**12**	**12**		**72**
Total Expenditure	**3,815**	**3,161**		**15,087**
(Increase)/Decrease in stock in trade	(261)	55		(75)
Consumption of Material	2,325	1,571		8,762
Staff Cost	310	258		1,161
Other Expenses	1,441	1,277		5,239
Balance	**808**	**855**	**(5.5)**	**3,592**
R&D Expenditure	166	157		510
Profit before Interest and Depreciation	**642**	**698**	**(8.0)**	**3,082**
Interest	133	168		635
Depreciation	128	124		502
Balance	**381**	**406**	**(6.2)**	**1,945**
Technology Licensing Income	233			
Profit before Tax	**614**	**406**	**51.2**	**1,945**
Tax	40	15		121
Profit after Tax	**574**	**391**	**46.8**	**1,824**
Paid - up Equity Share Capital	1,159	1,159		1,159
(Face value of Rs. 10 each)				
Reserves excluding revaluation reserves				14668
(as per balance sheet of previous accounting year)				
Earnings Per Share (Rs.)	4.95	3.37		15.74

Notes:
1. Staff cost related to R&D included under the heading "R&D Expenditure".
2. The Board has recommended dividend @ Rs.7.50 per share for the year ended 31st December 2000.

Exhibit 4
R&D Expenditures in 1999

Indian Firms

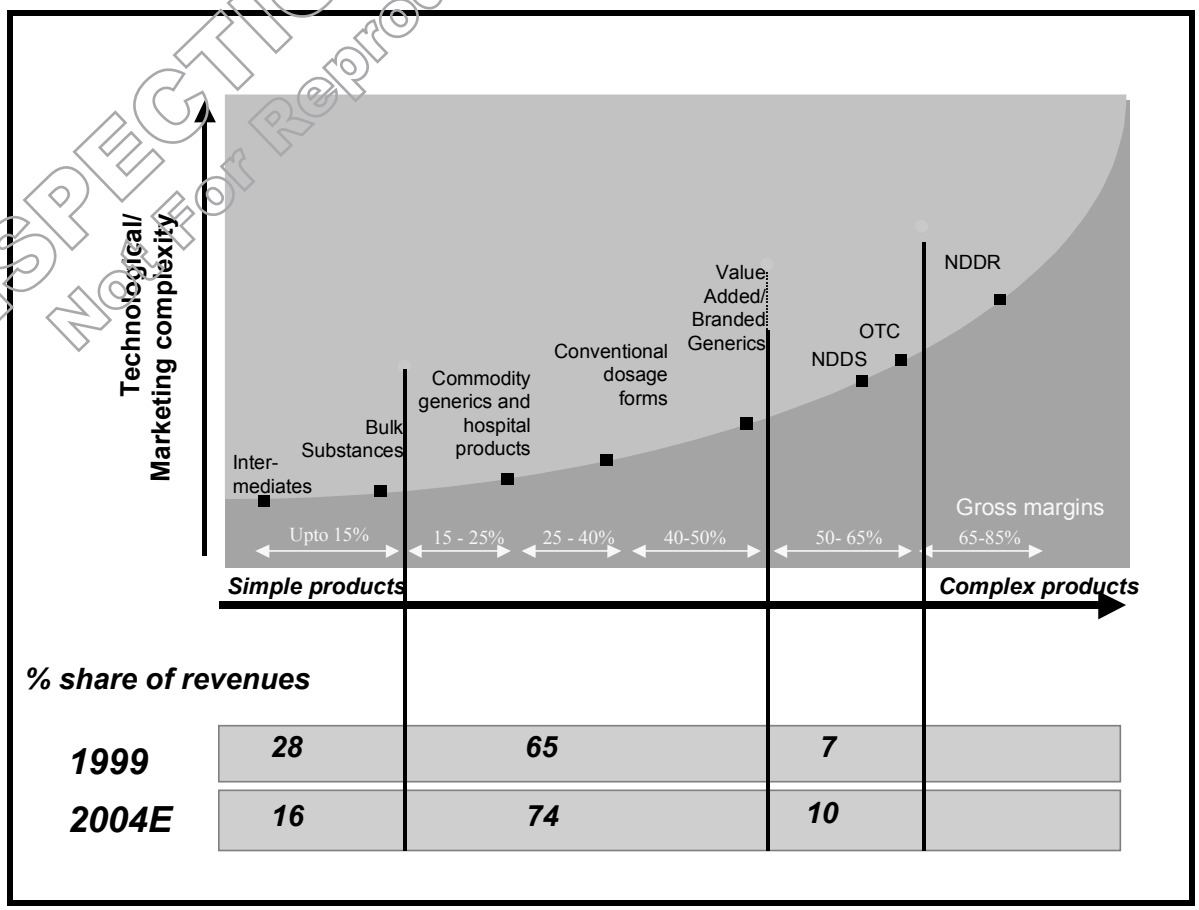
Player	Amount (million)	Percent of turnover
Ranbaxy	Rs.560	3.6
Wockhardt	Rs.450	8
Nicolas Piramal	Rs.92	2

Exhibit 5
R&D Expenditures of Multinational Firms in 1999

Player	Amount (billion)	Percent of turnover
Astrazeneca	$2.92	16
Pfizer	$2.77	20
Novartis	$2.65	13

Exhibit 6

Ranbaxy's Product Mix Across the Value Chain in 1999 & 2004



	Generics	NDDS	NDDR
Time	1-2	3-5	8-10
Risks	Low	Low to Medium	High to V.High
Returns	Low	Medium to High	V.High

Exhibit 7
Top Pharmaceutical Brands in India

Rank		Formulations	Company	Growth
FY00	FY01			% YoY
1	1	Becosules	Pfizer	2.4
2	2	Corex	Pfizer	3.1
4	3	Voveran	Hoechst Marion	5.4
3	4	Althrocin	Alembic Chemical	-0.1
5	5	Sporidex	Ranbaxy	-0.4
8	6	Zinetac	Glaxo	6.7
11	7	Betnesol	Glaxo	16
9	8	LIV-52	Himalaya Drugs	5.4
7	9	Cifran	Ranbaxy	-2.1
6	10	Taxim	Alkem Labs	-5.9
12	11	Phexin	Glaxo	8.2
10	12	Digene	Knoll Pharma	-
22	13	Human Mixtard	Knoll Pharma	21.8
34	14	Dexorange Plus	Franco Indian	297.1
21	15	Nise	Dr Reddy	18.5
26	16	Rabipur	Hoechst Marion	14.7
17	17	Omez	Dr Reddy	7.4
14	18	Mox	Rexcel	-6.8
23	19	Ceftum	Glaxo	10.8
15	20	Daonil	Hoechst Marion	1.6
16	21	Combiflam	Hoechst Marion	2.7
13	22	Ampoxin	Unichem Labs	-13.2
30	23	Gelusil-MPS	Pfizer	14.3
49	24	R-Cinex	Lupin	28.6
20	25	Revital	Ranbaxy	-0.8

Exhibit 8

India – Products of Different Ages (% Contribution)

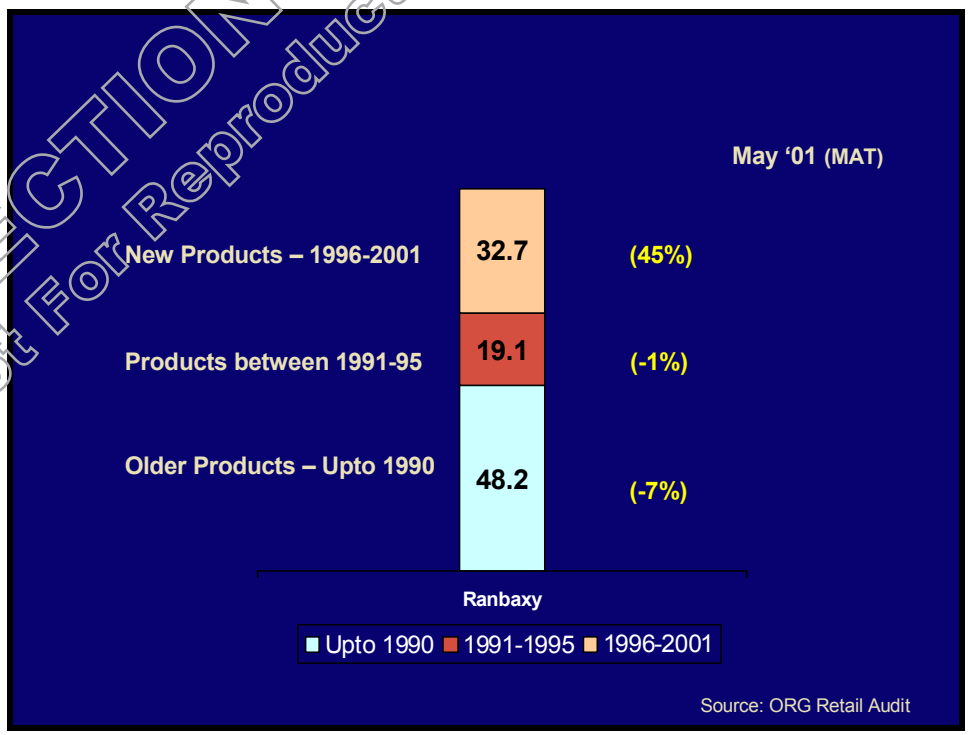


Exhibit 9

Ranbaxy's Presence Across Therapeutic Segments, 2001

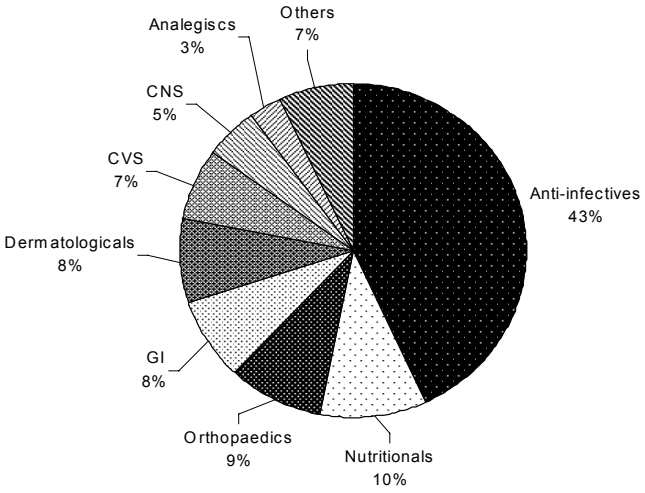


Exhibit 10
Ranbaxy's Marketing Divisions

Marketing Division	Market Share	No. of Doctors Reached	No. of Retailers Reached
Pharma	2.07%	100500	35000
Stancare	0.64%	47930	20000
Croslands	0.62%	56660	30000
Rexcel	0.61%	59830	21000
Solus	0.25%	31660	30000
Rextar	0.34%	50000	25000
Blue R	0.28%	Nil	*2500

Note: The salesforce of Blue R does meet retailers but is more focused on wholesalers and stockists.

Exhibit 11
The Quinolones Category

	1997	1998		1999		2000		2001	
	Value Rs. Mn	Value Rs. Mn	Gr. (%)	Value Rs. Mn	Gr. (%)	Value Rs. Mn	Gr. (%)	Value Rs. Mn	Gr. (%)
Quinolones	**4274**	**5221**	**22.2**	**5407**	**3.6**	**5722**	**5.8**	**6004**	**4.9**
Ciprofloxacin	2628	3327	26.6	3417	2.7	3328	-2.6	3015	-9.4
Ofloxacin	201	360	79.4	497	38.1	762	53.3	1133	48.7
Sparfloxacin	223	397	78.3	537	35.2	706	31.4	927	31.3
Norfloxacin	715	717	0.3	663	-7.5	644	-2.9	600	-6.8
Levofloxacin	0	0	#	2	#	35	#	126	261.3
Pefloxacin	228	159	-30.3	102	-36.0	77	-24.3	52	-32.1
Lomefloxacin	188	149	-20.6	104	-30.2	86	-17.8	46	-46.0
Others	91	106	16.8	84	-20.5	77	-8.0	97	25.6

Gr.=Growth.

Exhibit 12
Ciprofloxacin Prescriptions by Major Indications

Infection	No of Rxs	%
Fever	15997	406.2
Cough/Cold	7341	186.4
Pain	4505	114.4
Upper Respiratory Tract Infection	3934	99.9
Gastrointestinal disorder	3938	100.0
Lower respiratory tract infection	2449	62.2
Urinary tract infection	2061	52.3
Headache	1979	50.3
Pain Abdomen	1854	47.1
General Weakness with Anaemia	1646	41.8
Injury	1570	39.9
Soft tissue Infections	1462	37.1
Total	45010	

Note: As a prescription may have multiple indications/diagnosis, total across all indications will add up to more than 100%.

Source: CMarc CPR.

Exhibit 13
The Ciprofloxacin Market

	1997		1998			1999			2000		
	Value	Share	Value	Share	Growth	Value	Share	Growth	Value	Share	Growth
	Rs. Mn	(%)	Rs. Mn	(%)	(%)	Rs. Mn	(%)	(%)	Rs. Mn	(%)	(%)
Ciprofloxacin	**2628**	**558.4**	**3327**	**583.6**	**26.6**	**3417**	**583.2**	**2.7**	**3328**	**554.0**	**-2.6**
Cifran (Ranbaxy)	471	100.0	570	100.0	21.1	586	100.0	2.8	601	100.0	2.5
Ciplox (Cipla)	398	84.5	462	81.0	16.1	440	75.1	-4.7	425	70.7	-3.5
Ciprobid (Zydus Cadilla)	306	65.0	381	66.8	24.4	385	65.7	1.1	354	58.9	-8.2
Alcipro (Alkem)	139	29.4	267	46.8	92.5	350	59.8	31.4	344	57.2	-1.9
Ciprolet (Dr.Reddy's Lab)	73	15.4	134	23.5	84.9	226	38.6	68.8	233	38.7	2.7

Exhibit 14
Prices of Ciprofloxacin Brands (Per tablet in Rs.)

Brand	Tablet 250 mg	Tablet 500mg
Cifran	4.17	7.00
Ciplox	3.61	6.48
Ciprobid	3.61	6.48
Ciprolet	2.70	4.25
Alicpro	2.95	5.10
Generic generic	< 1	< 2

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