

India's fine chemicals industry – a force to be reckoned with

India's bulk medicinals industry could present an opportunity or a threat to western manufacturers, but as Dr Rob Bryant reports, international companies will ignore it at their peril.

The growth of India's pharmaceutical industry over the past 25 years has been phenomenal. From sales valued at US\$100 million in 1965 it grew to US\$2.52 billion in 1994. But while this emerging economy could offer the pharmaceutical industry a much needed opportunity to expand into a new market, as a low cost manufacturing base it could also represent a potential threat. So what has caused such rapid growth, what is the future for the industry in India, and what will be the likely impact on the global pharmaceutical business over the next few years?

Growth of the pharmaceutical industry in India has been almost entirely due to the

expansion of the domestic industry, which has fuelled the development of the Indian bulk medicinals industry (a selection of Indian bulk pharmaceutical companies together with their products is given in Figure 1). According to the Ministry of Chemicals and Fertilisers, the 1994-1995 production of bulk drugs totalled US\$483 million, an increase of 15% on 1993-1994. The liberalisation of the Indian economy during the nineties has further boosted this growth and 'unleashed' the Indian pharmaceutical industry.

The major producers of pharmaceuticals in India have invested in their bulk drug businesses not only to assure supplies of reasonably priced active ingredients, but also

because these operations produce good profits, especially exports. This contrasts with the economics of most multinational companies. The relatively low profitability of the finished pharmaceuticals business is a result of the Indian government's restrictive drug pricing policy, which ensures that the overall profit of pharmaceutical companies does not exceed 8-13% of pre-tax sales. This disadvantage has been effectively counter-balanced by the favourable patent policy and regulatory climate for bulk medicinals manufacture in India. These policies, which will be discussed later, have helped the establishment of a strong, locally owned company sector (accounting for 70% of domestic sales and 85% of bulk medicinal sales). This is in sharp contrast to the industries in much of the developing world, where multinational companies tend to dominate.

The manufacturing operations of most Indian pharmaceutical companies are of much greater commercial importance than is generally the case in the West, due to their higher relative profitability. Since the sales of the bulk and finished businesses are not usually separated, the task of defining the size of the industry and the ranking of its major players is difficult. In order to achieve reasonable profits companies have a mix of new and older products. The major companies' bulk medicinals businesses contribute between 10-20% of their total sales and profits (see Figure 2).

Among the leading producers of bulk medicinals (which nevertheless include substantial finished product sales), profitability can be as high as that for the companies specialising in finished formulations. It is also interesting that the turnovers of the bulk drug producers are comparable with the biggest in the world, whereas the low prices of Indian pharmaceuticals reduces the country's major players to companies of very modest sales, judged on a global basis (see Figure 3).

Company	Location	Bulk actives and intermediates produced
Alembic	Vadodara (Baroda)	erythromycin, kanamycin, penicillin G, azithromycin, roxithromycin
Cipla	Bangalore, Patalganga, Vikhroli, Kurkumbh	acyclovir, vincristine, vinblastine, etoposide, danazole, pentoxifylline, salbutamol, omeprazole, amlodipine, finasteride, lansoprazole
Chemisor Drugs	Peddadevula Palli*	diltiazem, terfenadine, famotidine, ranitidine, azacyclonal, NMSM, D-(+)-acid
Kopran	Khopoli, Saki Naka	amoxicillin, rifampicin, cefadroxil, ampicillin, cloxacillin, roxithromycin, 6-APA
Lupin	Ankleshwar, Manideep	ethambutol, pyridoxine, cefalexin, cefadroxil, 7-ADCA, rifampicin, metoprolol, ketorolac, pyrazinamide
Max India	Chandigar	7-ADCA, 6-APA
Merind	Bhandup	vitamin B12, cyproheptidine, amitriptyline
Natco Laboratories	Kothur Mandal	ciprofloxacin, terfenadine, diclofenac, fluoxetine, sumatriptan, ondansetron, ketorolac, salmeterol
Neuland Laboratories	Veerabhadraswamy	salbutamol, terbutaline, labetalol, ciprofloxacin, ranitidine
Ranbaxy Laboratories	Mohali, Dewas, Toansa	fluoroquinolones, cefalexin, cefaclor, 7-ADCA, ranitidine
Sekhsaria Chemicals	Dombivli	ibuprofen, diclofenac, piroxicam, mefenamic acid
Shasun	Pondicherry, Cuddalore	ibuprofen, ranitidine, dipyrone, NMSM
Siris	Hyderabad	ibuprofen, dipyrone, sulfamethoxazole, norfloxacin, ciprofloxacin
Sumitra	Hyderabad	ciprofloxacin, enrofloxacin, ibuprofen, diltiazem, ranitidine
Unichem	Bombay	buprenorphine, metronidazole, sulbactam, hydrochlorothiazide
Wockhardt	Ankleshwar, Aurangabad	dextropropoxyphene, captopril, pefloxacin, dextromethorphan

Figure 1: A selection of Indian bulk pharmaceutical companies. Source: Brychem.

A wide range of bulk pharmaceuticals are manufactured in India, with very few actually needing to be purchased abroad. With over 2,000 companies producing bulk drugs, India is well able to supply its needs and those of many export markets. Indeed, the export surplus on bulk medicinals has been very healthy for many years (1993-1994 imports were US\$235 million, compared to exports of US\$650 million). Traditionally, India's main export markets have been its neighbours, Russia, the Middle East and South America. The major companies are now selling increasingly to western countries: Germany, Italy, Spain and other EU countries and the US.

A recent feature of the supply of intermediates is the growing importance of China as a supplier. This reflects the need to reduce costs as much as possible, in the face of the cut throat competition that prevails in the domestic market. There is a growing awareness of the need to improve India's production of basic intermediates, in order to preserve its competitive edge.

The legal, fiscal and regulatory framework that has brought about India's unusual industry structure has been much discussed

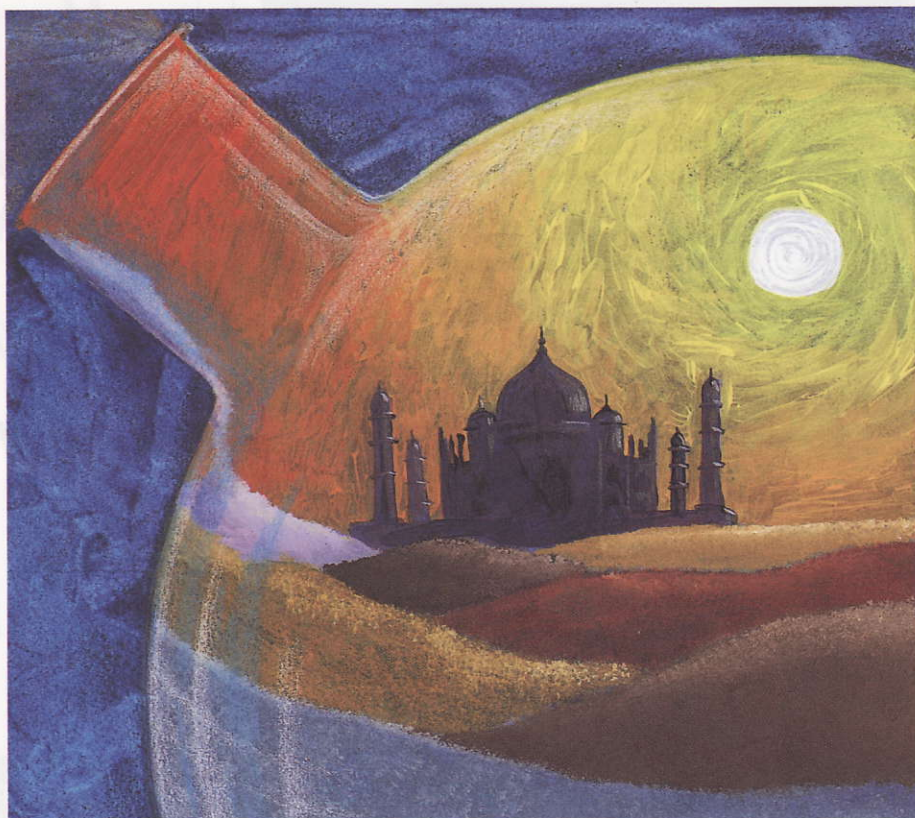


Illustration by Rob Wilcockson.

With over 2,000 companies in India producing bulk drugs, the country is able to supply its own domestic needs and those of many export markets.

Company	Indian drug sales	Total sales	Profits (%total sales)
Glaxo India	95	251	5.6
Ranbaxy Laboratories	67	219	9.5
CIPLA	59	78	7.9
Pfizer	50	68	8.3
Candila ¹	46	100	-
Boots Pharmaceuticals	43	56	7.9
Hoechst India ²	41	115	6.3
Torrent Pharmaceuticals	40	72	9.8
Ambalal Sarabhai	36	66	(0.03)
Burroughs Wellcome (India)	35	54	5.0

¹Cadila was split into two companies in June 1995 following an internal strategy disagreement.

²Hoechst's total sales include agrochemicals, dyes and other chemicals.

Figure 2: Sales in 1994 for top pharmaceutical producers in India. Figures are in (US\$ millions).

Source: ORG and the Centre for Monitoring Indian Industry (profits are before tax).

Company	Total sales	Profits (% total sales)
Dr Reddy's Laboratories	56	17.9
Kopran	51	13.9 (net tax)
Chemnor Drugs (inc Globe)	29	16.7
Sumitra	20	10.2
Shasun	16	8.3
Natco	11	-

Figure 3: Sales in 1994 for selected Indian bulk medicinal chemical producers (US\$ millions).

Source: Centre for Monitoring Indian Industry (profits are before tax).

as a role model for other emerging economies. The principal factors that have helped the Indian bulk medicinals industry to prosper have been:

- An absence of product patent legislation since 1972, which has meant that Indian pharmaceutical companies could launch effective new products at a fraction of the cost of the originators. In addition to the advantage this gives in home markets, companies have been able to supply bulk and finished materials to other unregulated markets well ahead of patent expiry. Subsequently they are able to supply western generic markets from a strong production base, upon patent expiry.

- The government defines two types of private Indian manufacturing company: large-scale and small-scale. The latter category of company, which dominates the supply of pharmaceutical intermediates and active ingredients,

enjoys very favourable treatment. They are hardly regulated and are consequently able to operate at a very substantial cost advantage.

- The government has imposed very high import tariffs on most chemicals. This has enabled Indian fine chemical producers to supply export markets on a marginal cost basis, since internal prices have been so much higher. This advantage depends critically upon the high volume of the local market, which effectively supports the export sales. Steady reductions in import tariffs since 1990 have lowered these domestic pricing advantages (see Figure 4).
- Profits on pharmaceuticals and bulk medicinals exports are tax-free, which has further encouraged the industry.

Other factors that have helped the country's development include low capital and running costs and an excellent pool of chemical technologists.

There have been drawbacks to the government's strong participation in the regulation of the pharmaceutical industry. However, the net result has been positive, as the rapid growth of the industry clearly demonstrates.

Technology and processes

In the early days of the industry, many start-up companies bought poorly defined processes from third parties. Often the processes were not very effective and were

usually unable to deliver the highest quality product. Indian chemists were able to develop these basic synthetic routes and then create a profitable business from operating them. Early pioneers included Cipla, Cadila, Alembic, Unique and Unichem, some of which are now leading pharmaceutical producers. More recently Dr Reddy's Group, Lupin and Kopran have been responsible for successful process developments. This ability to develop good processes has distinguished the Indian bulk medicinals industry and enabled it to succeed where others have failed. While generalisations always represent over-simplifications, it is true to say that India's fiercely entrepreneurial culture is probably one of the major factors for this success. Where state intervention all but crippled the chemical industries of countries like the former Soviet Union and its allies and China, the Indian industry has managed to survive and prosper, in spite of government bureaucracy.

The other side of this same coin is that the business ethics of many Indian companies leave much to be desired, even by the standards of its Asian neighbours. In particular, the readiness of employees to transfer processes from one employer to the next is so great that no real protection of know-how is possible in India. This has led to too many producers of popular products and low margins for all. This is clear from the number of export producers of important bulk pharmaceutical products. Although the number of significant producers in each case is much smaller, there are still far too many (see Figure 5).

Patents

Much has been said and written about India's stance on product patents, not least in India itself. Useful summaries of the Indian situation appeared last year in articles by Heinz Redwood (*Scrip Magazine*, June 1994) and by Prof Michael Davis (*Scrip Magazine*, December 1994). Essentially, product patents have not been in force since 1972, when the 1970 Patent Act was introduced. This law was enacted to reduce the prices of drugs, improve the availability of newer inventions and to stimulate the development of a domestic pharmaceutical industry.

Having helped to create a strong domestic pharmaceutical industry, in 1994 the Indian government judged that the benefits of re-imposing product patents would outweigh the drawbacks. That the re-introduction of product patents was linked with obtaining agreement in the General Agreement on Tariffs and Trade talks, was a powerful influence for change. Essentially,

Date	Import tariffs	Date	Import tariffs
1992	130%	1995	40-50%
1993	85%	1996	30-40%
1994	65%	1997 (expected)	25%

Figure 4: Indian import tariffs for bulk medicinals and intermediates 1992-1997.

the new Patent Act brings Indian intellectual property rights into line with that of much of the developed world, with 20 year patent terms being introduced from 1995 onwards. A ten year transition period will cushion the effect on its industry. Since product patent legislation will not be retrospective, India will be able to take advantage of opportunities represented by 'pipeline' products unavailable to other competitors, such as China and Canada, where the cut-off year was 1986.

The effect that the Patents (Amendments) Rules 1994 will have on the Indian bulk medicinals industry will probably not be as traumatic as has been anticipated, even if it is finally ratified by parliament. The main concerns have been:

- The price of finished pharmaceuticals would go up sharply. The government's new price control agency, the National Pharmaceutical Pricing Control Authority (NPPA) has been set up as part of its new drug policy, which was introduced this year. Its task will be to ensure that prices are kept under control.
- The domestic industry will be taken over by the multinationals. There may be greater justification for this concern. However, the greatly improved quality of the bulk pharmaceutical production facilities being set up in India suggest that the industry will take a rapidly increasing share in supplying the world generic market, set to reach around US\$60 billion by 2000. Whether the companies are in Indian or multinational hands, increasing investment in the industry will be made by foreign companies. However, the more successful domestic companies will also make acquisitions abroad. The balance seems certain to be in India's favour on present form.
- The poor in India will be denied essential drugs. This concern appears to be hard to support, since the government continues to ensure that such drugs are available at very low

prices (many needy people still do not have access to these cheap drugs, in any case).

Despite continuing opposition to the act, industry appears to have reluctantly accepted that product patents will become a feature of life. Most are taking this pragmatic view, and have made new representations to government through the bulk producers association, the IDMA. This body has been a staunch opponent of the re-introduction of product patents, maintaining that India cannot afford monopolies. It is still pushing for compulsory licences as a way of ensuring that prices are kept low. They have also recently asked for a package of incentives for industrial research: the point of imposing product patents is to stimulate the research-based industry, therefore it seems reasonable to introduce some tax breaks to help fund research. The larger companies are already investing heavily in R&D, both at the fundamental level and at the process development level.

Outlook

For the future, it is impossible to justify anything other than a very positive outlook for India's bulk medicinals industry, as it continues to record growth of 15-20% per year. Scarcely a week passes without an announcement of yet another bulk medicinal plant being set up (see Figure 6). By contrast, it would be hard to think of a single new bulk medicinal chemicals company being set up in Europe.

Many newer plants are being built to internationally acceptable standards and operated under Good Manufacturing Practice. Specialist bulk medicinal producers such as Sekhsaria and Shasun have operations that would stand comparison with anywhere in the world. The industry will make full use of the advantages that its recent history has bequeathed it. The main trends that are already discernable will continue:

- The larger pharmaceutical groups will continue to expand and internationalise (many leading companies have already set up foreign production operations and/or

Product	Number of producers	Product	Number of producers
Atenolol	20	Amoxicillin	22
Cefalexin	19	Chloramphenicol	33
Ciprofloxacin	19	Diclofenac	15
Erythromycin salts	17	Ibuprofen	19
Norfloxacin	25	Paracetamol	25
Sulfamethoxazole	19	Trimethoprim	28

Figure 5: Technology transfer: overcapacity in the Indian bulk medicinals industry.

Company	Products	Investment (US\$ million)
Betanaphthol	norfloxacin, enrofloxacin, pefloxacin, nalidixic acid, N-methylpiperazine, TMBA, 1-amino-4-methylpiperazine	21
Proven	diltiazem, ranitidine	4
Orchid	cefalexin, cefadroxil, cefradine, ceftriaxone, cefotaxime, cefazolin	-
Shrishma	naproxen, X-ray contrast media	-
Roopa	cefadroxil, cloxacillin, ampicillin	2.6
Welcure	ampicillin, trimethoprim, amoxicillin, cloxacillin, ibuprofen	-

Figure 6: New or proposed Indian bulk pharmaceutical plants (from *Chemical Weekly* news items May-June 1995).

established cooperative projects with western producers). Relaxation of government curbs on export of capital has enabled such activities to proliferate since 1991.

•The bulk medicinal producers will rapidly develop their share of the western generic market as the quality of their products and plants continues to improve. (India is already a major force in ibuprofen, ciprofloxacin, rifampicin, and ethambutol

and will quickly emerge as the major supplier of ranitidine, naproxen, diltiazem, amoxicillin and many others).

•Partnerships with western companies will increase greatly as each side takes advantage of the other's strengths. The better Indian producers will prove to be secure, cost-effective sources of bulk medicinals and their intermediates, and will provide access to a huge, rapidly growing market.

•The bulk medicinals industry will restructure, with smaller scale producers becoming consolidated into larger groups, due to increasing government pressure on investments in environmental and safety concerns. The larger companies will forward integrate into finished dosage forms (many already have) and will strike deals with foreign companies which will result in some being acquired and others becoming larger, international organisations.

The emergence of India as a force to be reckoned with will have a profound impact on the international pharmaceutical indus-

try. Pharmaceutical companies in the West cannot afford to ignore the opportunities that India can bring. These include: a source of competitively priced bulk medicinals produced in well equipped and run manufacturing plants, ready access to a large and expanding pharmaceutical market, through direct investment or partnerships with existing companies, and new products and process technologies, available from entrepreneurial companies looking for international tie-ups.

Producers of bulk medicinals and their intermediates in the West, be they divisions of larger companies or independent players, will need to come to terms with the Indian industry. The wise ones will find ways to work with Indian companies by entering into technical or commercial partnerships. The unwise will find it difficult to compete with them and will ignore them at their peril. **SM**

•*Dr Rob Bryant runs Brychem, a UK-based fine chemical consultancy that undertakes market studies and techno-economic evaluations for companies supplying the international pharmaceutical industry.*