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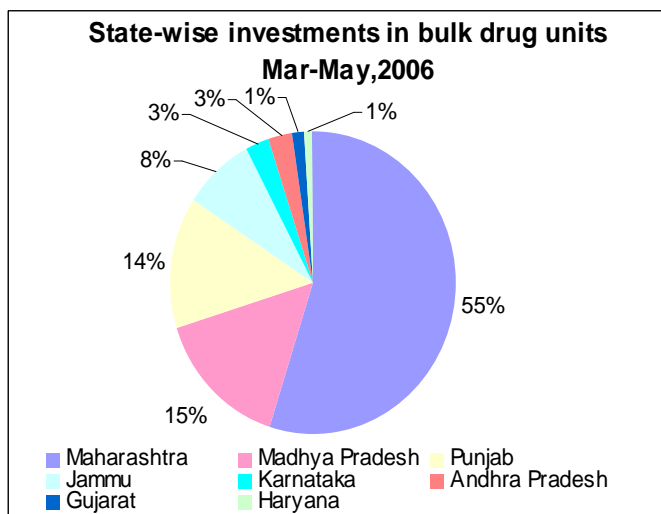


**In Focus:** Maharashtra – the preferred investment destination for pharmaceutical company

The bulk drug industry is highly fragmented, with a large number of small players. The global bulk drug market, worth an estimated US\$77.33 billion in 2005, grew at a compounded annual growth rate (CAGR) of 9.2% in the last five years. In 2005, the Indian bulk market size was US\$1.15 billion. Higher manufacturing cost in producing active pharmaceutical ingredients (API) makes the western countries look for cheaper destinations like India. To grab this opportunity, most of the companies are setting up or expanding their facilities. Since March 2006, 20 bulk drug units got a clearance from the Environmental Impact Assessment Division (IA) of the Ministry of Environment & Forest. Most of the bulk drugs and intermediate manufacturers are planning to set up new units or expanding existing operations in Gujarat, Maharashtra, Haryana, Punjab and Andhra Pradesh.

**Maharashtra – leads the show in investments in the bulk drug units**

Maharashtra is the largest investment spender in bulk drug units that accounts 55% to the total investment made in different states. This is followed by Madhya Pradesh and Punjab that are contributing 15% and 14% respectively. Cipla, the largest drug maker in India is expanding its bulk drug manufacturing facility in Pune with a total investment of Rs250m. Lupin, another drug major, is expanding capacities of its two bulk drug plants in Madhya Pradesh and Maharashtra. Lupin's plant at Maharashtra will be expanded with an investment of Rs.200m. The other bulk drug unit of Lupin in Madhya Pradesh will be expanded with an investment of Rs197.5m.



Source: Cygnus Research

List of bulk drug units approved since March 2006

Company Name	Location	Expansion /Set up	Investment (Rs m)
Kalvik Laboratories Pvt. Ltd	Medak, Andhra Pradesh	Set up	18.7
Biochemical and Synthetic Products Limited	Jeedimetla, Andhra Pradesh	Set up	8.6
Lakshmi Organics Pvt Limited	Krishna district, Andhra Pradesh	Expansion	8.5
Hem Deep Organics Pvt Limited	Ankleshwar, Gujarat	Set up	11.7
Varahi Pharmachem	Ankleshwar, Gujarat	Set up	4.5
Tristar Pharmaceuticals Pvt Limited	Panchkula, Haryana	Set up	8.19
Mahima Exports Pvt Limited	Sonepat, Haryana	Set up	4.0
Ind-Swift Laboratories	Samba, Jammu, J & K	Expansion	103.6
Hindustan Latex Limited	Belgaum, Karnataka	Set up	37.0
Lupin	Mandideep, M.P	Expansion	197.5
Cipla	Kurkumbh, Pune, Maharashtra	Expansion	250.0
Lupin	Palghar, Pune, Maharashtra	Expansion	200.0
Vedant Drugs and Fine Chemicals	Ambarnath, Maharashtra	Set up	120.0
Emmellen Biotech Pharmaceuticals Ltd	Mahad Industrial Estate, Maharashtra	Expansion	120.0
Aarti Drugs Limited	Palghar, Thane, Maharashtra	Expansion	18.2
Ind-Swift Laboratories	Bhagwanpur, Patiala, Punjab	Expansion	183.5

*Source: Compiled by Cygnus Research*

**Industry friendly environment increases density of pharmaceutical firms**

Ø Maharashtra leads the way for the pharmaceutical industry in the country. The state is a nerve centre for the pharmaceutical sector. Nearly 40 per cent of drugs and pharmaceuticals produced in the country are manufactured in Maharashtra. There are around 4638 large, medium and small manufacturing units operating across the state, mostly concentrated in the regions of Mumbai, Thane, Palghar, Nashik, Aurangabad and Pune. Maharashtra is definitely the torch bearer for the pharmaceutical industry in the country. Almost all the multinational firms and all major companies have their corporate offices and manufacturing units in Maharashtra. Regarding the manufacturing of active pharmaceutical ingredients (APIs), Maharashtra comes third. Maharashtra is the first to adopt integrated approach with regard to both quality of food and drugs. Almost 70% of APIs and about 50% of formulations produced in the country are exported from Maharashtra.

Maharashtra cluster (Includes Mumbai, Thane, Belapur)		
	Products	Basic drugs
Age of cluster (years)		50
No. of units (Approx.)		230
Annual production (Rs. billions)		82.2
Annual exports (Rs. billions)		14.1

*Source: NISIET, Govt. of India*

**Outlook**

The Indian API manufacturing industry is the third largest in the world with accounted sales of US\$2 billion in 2005 and is expecting to reach US\$4.8 billion by 2010. Still another 20 more bulk drug units are under the process of approval from the Environmental Impact Assessment Division (IA) of the Ministry Environment & Forest, of which Maharashtra is expected to host a major chunk. Out of those 20 projects, Aarti Drugs is to set up two bulk drug manufacturing plants at MIDC, Tarapur near Thane. The government of Maharashtra has also invested massively to upgrade its infrastructural metrics over the last few years closely working with the public-private partnerships. The Maharashtra government is also planning to recommend for an exemption in income tax and also sales tax. So most of the companies want to avail this benefit by setting up or expanding their facilities.



### INTERNATIONAL

#### AMERICAS

##### USA: IPS makes a move to India

Integrated Project Services (IPS) has announced it has opened two offices in India in a bid to expand its services into this budding region. The US-based firm, which provides the pharma industry with services in engineering, design, building, validation and compliance of facilities, with the new Indian offices IPS can meet the demand of pharma companies offshoring to India. The move comes at a time when India's drug manufacturing industry is tipped to grow 10% over the next three years as more pharma firms shift some or all of their manufacturing operations there to cut costs. In addition, India has lifted its game in the drug making arena of late, striving to provide standards of international quality, and now has the largest number of US Food and Drug Administration (FDA) approved plants on a worldwide scale.

##### USA: Merck and Danish partner Lundbeck say test results dash insomnia drug development

Merck & Co. and its Danish partner, pharmaceutical company H. Lundbeck A/S, are putting to rest development of an insomnia drug that was in the final human testing stage after studies found safety problems, including hallucinations. The companies have stopped testing the drug, known by the chemical name gaboxadol, after a three-year partnership. New Jersey-based Merck and Copenhagen-based Lundbeck had planned this summer to apply for US regulatory approval to sell the drug, which likely would have been the first of a new class of sleeping pills. The company halted development of two other drugs late in testing in November 2003, one for diabetes and the other for depression. Merck sells Singulair for allergies and asthma, Fosamax for osteoporosis and, with Schering-Plough Corp., cholesterol drugs Vytorin and Zetia.

##### USA: Pall protests patent breach

Pall has filed a patent infringement case in the US, claiming another firm is manufacturing and selling a device that violates patent protection of one of Pall's sterile connector products. Pall has brought the action against Florida-based BioQuate, claiming that its disposable aseptic connector device infringes on a patent covering Pall's Kleenpak aseptic connector range. The company is seeking damages from BioQuate, as well as an injunction preventing the firm from continuing the sale of their connector product. By offering a wide range of disposable, aseptic connectors Pall aims to present a safer option for manufacturers with reduced risk of cross-contamination and no need for cleaning validation, as well as saving companies time and money by using the disposable devices. As the patent infringement suit being filed by Pall refers to patents regarding all Kleenpak products, these new devices will also be covered as part of the Kleenpak range.

##### USA: Bradman Lake sheds packaging brands in restructuring

Packaging technology firm Bradman Lake is selling off recently acquired brands Albro, Dico and Gravfil only months after investing in a new multi-million pound manufacturing facility. Bradman Lake acquired the three brands as part of its 2004 acquisition of GEI Packaging, but has now decided to hive them off following reviews that concluded the brands would be better served as a separate business. The brands together provide a range of vacuum and net weight filling machines, capping and closing systems, and liquid filling systems. The company has five manufacturing sites in North America and Europe, and has distributed machinery to over 20,000 sites worldwide. The focus of the company will now be concentrated on the Bradman Lake, Autowrappers and Europack brands, which together specialise in cartoning machines and systems, wrapping machines, and standard and customised film wrapping solutions.

##### USA: Hi-tech Pharmacal receives tentative approval for Calcipotriene topical solution

Hi-Tech Pharmacal Co., Inc. announced the US Food and Drug Administration (FDA) has granted tentative approval to the company's Abbreviated New Drug Application (ANDA) for Calcipotriene topical solution, 0.005%. Hi-tech's

Calcipotriene topical solution is the generic equivalent of Warner Chilcott's Dovonex(R) topical solution, 0.005% indicated for the treatment of psoriasis of the scalp, which had sales of US\$13m in 2006 based on IMS sales data. Hi-Tech does not plan to market its generic version of Dovonex(R) topical solution prior to expiration of patent 4,866,048, which is due to expire on December 29, 2007. Hi-tech is a specialty pharmaceutical company developing, manufacturing and marketing branded and generic prescription and OTC products for the general healthcare industry. The company specialises in difficult to manufacture liquid and semi-solid dosage forms and produces a range of sterile ophthalmic, otic and inhalation products.

**USA: SRI and Blanca collaborate to develop antibiotics for drug-resistant infections**

SRI International, an independent non-profit research and development organization, and Blanca Pharmaceuticals, a company discovering and developing antibiotics for serious bacterial infections, announced will jointly develop and conduct final preclinical studies of Blanca's carbacephem antibiotic drug candidates, now in late-stage preclinical development. SRI serves as Blanca's incubator, providing laboratory services and facilities for many of Blanca's drug development needs. SRI and Blanca will study compounds BP-101 and BP-102, which have broad-spectrum bactericidal activity against the most problematic Gram-positive bacteria, such as methicillin-resistant staphylococcus aureus and epidermidis these activity profiles make compounds BP-101 and BP-102 ideal candidates for empiric therapy against hospital-acquired infections when the causative pathogen is unknown. It is estimated that five to ten percent of hospital patients acquire a drug-resistant infection they did not have prior to admission.

**USA: NEXUS Biosystems universal store for global compound management**

NEXUS Biosystems announced that Vertex Pharmaceuticals Incorporated recently selected the Universal Store system to serve as the main repository for maintaining and managing their global compound collection. The Universal Store system will become a central component of the discovery operations function at Vertex's San Diego research site, enabling Vertex to support global screening demand across all its research sites. The discovery operations team utilises state-of-the-art instrumentation and data management tools to enable high throughput data generation within the Vertex research community.

**USA: Turning over a new leaf with cellulose drug delivery**

A new cellulose-based drug delivery system could be on the horizon. Dr Maren Roman of the College of Natural Resources at Virginia Tech has been working with cellulose nanocrystals particles with many properties that make them perfect candidates for development of a new generation of drug delivery systems. Cellulose has been traditionally used for the reinforcement of polymers. Otherwise it had been largely overlooked, only gaining more attention recently after all the hype about nanotechnology. Cellulose has been routinely used in medical and pharmaceutical applications for many years, and is a very benign material well tolerated by the body. The nanocrystals are a suitable size to be carriers in drug delivery, and have many reactive functional groups on their surface to which drugs or targeting molecules could be attached. With cellulose also representing a renewable resource, it could prove an attractive option for drug manufacturers.

**USA: Outsourcing key to manufacture combo products**

Outsourcing is key for pharma companies and medical device manufacturers keen to develop and produce combination products medical devices embedded with a pharma component. Drug companies struggling to meet the unique testing guidelines, practices and regulations generated by the development and production of the new breed of "combo products" should rely on outsourcing. A combination product is comprised of two or more regulated components a drug/biologic coupled with a device, or a drug and a biologic combined with a device that are mixed and produced as a single entity. Such products are gaining in popularity as they are tipped to be safer and more efficient than standard drugs, have the potential to extend the lifecycle of existing drugs for manufacturers and, in some cases, can improve patient compliance.

**USA: Drug coating chemical linked to male fat and insulin resistance**

Phthalates, a class of chemicals used in some drug coating applications and linked to reproductive problems, has now also been implicated in causing abdominal obesity and insulin resistance in adult males. The research adds to the growing body of scientific evidence linking phthalates to health problems. The resulting regulatory and consumer fallout could eventually force pharmaceutical manufacturers to search for alternatives. Previous scientific studies on humans

have found that phthalates are associated with poor semen quality in men and subtle changes in the reproductive organs in baby boys. The new research shows suspicion that low-dose exposure to phthalates and other common chemicals may be reducing testosterone levels or function in men, and thereby contributing to rising obesity rates and an epidemic of related disorders, such as Type II diabetes. According to the FDA, there are currently fewer than 25 approved oral dosage forms containing phthalates, with typical amounts of from 1-to-20mg per dosage unit.

**USA: Microtest aseptic manufacturing expansion brings new contract**

Microtest Labs has bagged a new contract with UK-based Antisoma to make clinical quantities of the firm's new cancer drug just a few months after expanding its manufacturing capacity. Under the terms of the agreement, Massachusetts-based contract manufacturer Microtest will be in charge of the formulation and aseptic fill/finish of Antisoma's AS1411 drug for forthcoming Phase II trials. In addition, the firm will conduct stability testing of the product. The expansion included constructing and equipping new pharmaceutical testing laboratory facilities, a series of segregated virology testing laboratories, and new aseptic fill/finish manufacturing facilities, along with the hiring of additional staff.

**USA: Ajinomoto launches stable dipeptide**

US-based Ajinomoto Aminoscience has launched AminoStable, an L-Alanyl-L-Glutamine dipeptide for use in pharmaceutical products and cell culture media. The company believes AminoStable's clean, adaptable profile and cost-effective manufacturing process will expand use of an amino acid whose applications to date have been restricted by poor stability and prohibitive costs. A division of Ajinomoto USA it is the leading global supplier of amino acids, Ajinomoto Aminoscience has manufactured AminoStable using a novel enzymatic method that can generate peptides in high yields at reduced cost. Conventional synthetic methods of manufacturing peptides are often lengthy and complex, with a high level of impurities, and can result in racemic mixtures that contain different enantiomeric forms of the peptide. The desired form then needs to be separated and purified, but standard purification procedures are highly expensive and in some cases can render the process commercially unviable.

**USA: Dow and Colorcon in controlled release collaboration**

Major chemical manufacturer Dow has struck a deal with long-term partner Colorcon forming an alliance to offer a unified package for the development and production of drug ingredients and products. According to the deal, Colorcon will be responsible for the global marketing, sales, technical service and development and distribution of Dow pharmaceutical products for use in oral controlled release applications. The deal only applies to certain polymers and resins from Dow's range, specifically the company's Methocel hypromellose polymers, premium or NF grade Ethocel ethylcellulose polymers and all Polyox polyethylene oxide resins used in pharmaceutical applications. The emphasis of the agreement is on polymers used in controlled release applications as it has been marked as a high growth area for the companies' customers.

## Europe

**UK: Nanocrystals could be a route to carrier-free drug delivery**

A novel method of delivering a hydrophobic drug, in which the compound effectively acts as its own carrier, has shown comparable efficacy both in vitro and in vivo to the same drug formulated in a conventional delivery vehicle. According to US researchers from the University of Buffalo (UB) and the Roswell Park Cancer Institute (RPCI) believe the technique, which could move swiftly into clinical trials, offers significant cost and toxicity advantages over the surfactant or other carrier vehicles commonly used to ensure the stable dispersion of hydrophobic agents into aqueous systems. The new approach is based on a method known as reprecipitation, whereby a compound is dissolved in a mixable solvent such as DMSO and injected into water. The molecules then self-assemble as pure nanosized crystals and remain stably dispersed in water.

**UK: United Drug enters mainland Europe with packaging buy**

United Drug has acquired a contract packaging business from Budelpack International, making good on an earlier promise to seize opportunities to expand its outsourcing businesses. The purchase is United Drug's first foray beyond Ireland and UK into mainland Europe and marks the beginning of a concerted effort by the firm to build an international pharma and healthcare services company. The Irish firm bought Budelpack's pharma and healthcare packaging division, which is to provide a full range of contract packaging services, from the Belgian firm for an

undisclosed sum and it will now be integrated into the company's Supply Chain Services division. The business works with a number of international manufacturers throughout Europe and employs 140 people, all of whom will be retained.

**UK: Sunny Skyes as injectables business falls to earth!**

UK firm SkyePharma has announced that it has finally completed the sale of its deadweight injectable business, freeing up the company to focus on the development of products that the company believes could rival those of the pharma big guns. The sale to financial investment group Blue Acquisition finally plugs the cash-drain that the injectables business was causing at the company - in the six months running up to June last year the company suffered an operating loss of £11.7m (€17.4m) through the division, with revenues of just £3.9m. The company announced its intentions to shed the injectable business after a review at the beginning of 2006, and in January this year announced the potential buyer and a possible US\$82m (€63m) heading SkyePharma's way as a result of the deal.

**Switzerland: Alphacos offers new guard against needle-stick injuries**

Swiss packaging-machine manufacturer Alphacos has launched a new product to help protect healthcare workers using pre-filled syringes against needlestick injuries. By assembling the syringes into safety devices that shield the needle after use, the Type 211 machine addresses the growing and potentially very risky problem of needlestick injuries. According to Alphacos, the Type 211 machine can achieve an output of roughly 350 assemblies a minute. A video control system checks the syringes are correctly fitted with safety devices and automatically rejects any defective assemblies, while a touch-screen operator-interface terminal with intuitive graphic displays facilitates operator training and helps to ensure the system operates with maximum efficiency. Users may also add a module for the assembly of back-stops - a form of tamper-proof seal that shows the syringe has never been used before. The Type 211 machine is priced at around €370,000, although this will vary according to the options available. Veuillet said the price was very close to that of Alphacos' competitors.

**France: Solo Star insulin pen to debut on ease-of-use platform**

Sanofi-Aventis is gearing up for the European roll-out of a new disposable insulin pen designed to address a broader spectrum of patient needs than currently available injection devices. SoloStar pens for administering Lantus and Sanofi-Aventis' fast-acting prandial insulin Apidra were approved by the European Commission last September. With Germany as a springboard, the company plans to launch SoloStar into the French market in May and across Europe within 12 months. The US Food and Drug Administration's review of an approval application for Apidra SoloStar is ongoing and launches in international markets will follow. The new product's heightened sensitivity to a combination of user needs should differentiate it from other disposable insulin devices such as Eli Lilly's Humulin/Humalog pen and Novo Nordisk's FlexPen, Sanofi believes.

**Spain: Spanish group finds recyclable medium for thioether derivatives**

A group of researchers at the University of the Basque Country in Spain has developed a method of synthesising thioether derivatives using a cheap, non-toxic and recyclable medium that could have significant cost and efficiency implications for the manufacture of some pharmaceuticals. The researchers from the university's Department of Organic Chemistry II focused efforts on diaryl sulphides, which are a key structural component of certain drugs such as antibacterials. The University of the Basque Country team tackled these problems by using a catalyst of copper salt in water. As they point out water is not only available in abundance but is a cheap solvent, easily handled and does not produce any contamination.

**Germany: IWKA sheds its packaging division**

IWKA, a German automation specialist that designs and builds manufacturing and packaging systems, is selling its packaging division to Berlin-based investment company Odewald & Compagnie for around €255m. The packaging arm, which consists of more than 20 companies spanning, Europe, North and South America and Asia, has an enterprise value of around €240m. The agreement with Odewald & Compagnie, which is subject to approval by antitrust authorities, also includes a substantially utilised property belonging to the Packaging division, which will be sold for €17m. According to IWKA, the deal with Odewald & Compagnie takes into consideration the more than 2,500 staff employed by the packaging arm. Employees of the division's German companies have been offered a location guarantee valid for several years and a promise that there will be no operationally based contract terminations.

## Middle East

Israel: Teva receives first US approval for generic uniretic tablets

Teva pharmaceutical industries ltd announced the US food and drug administration has granted approval for the company's abbreviated new drug application. Teva's moexipril hcl and hydrochlorothiazide tablets are the first Ab-rated generic equivalent of schwarz pharma's uniretic tablets, a product indicated for the treatment of hypertension. The brand product had annual sales of approximately US\$30m in the US, based on IMS sales data.

## Asia Pacific

China: 3SBio Inc announces addition to product portfolio

3SBio Inc, a leading biotechnology company focused on researching, developing, manufacturing and marketing biopharmaceutical products primarily in China, announced that the company has received approval from the PRC State Food and Drug Administration ('SFDA') for licenses to produce and sell pre-filled syringe erythropoietin products in 2,000 IU, 3,000 IU, 4,000 IU and 10,000 IU strengths under its brand name, EPIAO. The company plans to launch pre-filled syringe EPIAO products within 2007. The pre-filled syringe products are a natural complement to 3SBio's portfolio of market leading products, including its flagship EPO product, EPIAO. EPIAO is currently an SFDA approved EPO for the specific treatment of anemia associated with chronic kidney diseases and chemotherapy-induced anemia. With a solid track record of safety, quality and reliability, EPIAO remains one of the most widely recognized and trusted EPO brands in China.

China: Antiretroviral drug under development

The experimental CCR5 inhibitor Nifeviroc, which is being developed by Chinese scientists, has been licensed for clinical testing in the country as an HIV/AIDS treatment. CCR5 inhibitors, also known as CCR5 receptor antagonists, aim to prevent HIV from entering human cells rather than fight the virus once it has entered cells. CCR5 inhibitors block HIV from docking with a human cell's CCR5 receptor, which is where HIV usually latches onto a cell to enter it. Previous studies have shown that people who lack CCR5 receptors because of genetic mutations rarely contract HIV. Nifeviroc is under joint development by scientists at the China Academy of Sciences' Shanghai Institute for Biological Sciences and the Shanghai Institute of Organic Chemistry. The drug is taken orally and can be used alone or in combination with other drugs, and early clinical trials have indicated that it might be safe and effective.

Singapore's growing biopharma strength

As Swiss firm Lonza announced it has broken ground at its second manufacturing site in Singapore, the region looks set for growth in biologics manufacture with biological products due to take centre stage in the pharma industry over the coming years. Biologics are forecast to be the fastest growing sector of the pharma industry, with big pharma estimated to be generating around 60% of revenue through biologic products by 2010. With many companies looking to Asia for cheaper manufacturing options, Singapore is proving an increasingly popular choice and has been steadily adding to the list of firms who have established bases and manufacturing facilities in the country. As Singapore's reputation as a competitive, highly technological, high quality manufacturing location grows, it is likely to attract further interest from pharma companies looking for a cost effective means of establishing and strengthening their presence in the burgeoning biopharmaceutical arena.

## National

AICTE relaxes norms to start M.Pharm course in pharmacy colleges

All India Council of Technical Education (AICTE) has decided to relax the norms for starting M.Pharm course in the pharmacy colleges in a bid to ease the problem of acute shortage of qualified pharmacy teachers in the more than 660 pharma colleges in the country. As per the decision, any pharmacy college that has completed 4 years of academic existence can start the M.Pharm course. Earlier, AICTE used to give its nod to start M.Pharm course to those colleges which have completed at least two batches of B.Pharm courses. The decision will have a positive impact on the quality of pharmacy education in the country as the availability of qualified faculty will improve considerably in a couple of

years. Due to the acute shortage of qualified teachers, the colleges were left with no option but to appoint unqualified faculty members.

#### Reliance Life Sciences set to foray into pharmacy education

The Reliance Life Sciences (RLS), a group company of Mukesh Ambani, decided to foray into the educational sector by setting up a school for life sciences, Reliance School of Life Sciences, to promote competency in the biotech industry. The institute will come up at the RLS campus in next July with two diploma courses, one in clinical research and the other in biopharmaceutical manufacturing. In the initial period the institute will make use of the facilities at RLS and later will move to its own campus. The separate campus is likely to come up in Maharashtra, Gujarat or Andhra Pradesh. The biotech industry of the country is facing shortage of manpower and both courses, clinical research and biopharmaceutical manufacturing, will accommodate 30 to 50 students. The medico-marketing programme will conduct in association with IIT Bangalore and the biopharmaceutical-manufacturing programme with IIT Bombay. The company has already tied up with Bombay University to start programmes in other areas.

#### India: Pharma firms find US ally in patent row

Domestic public interest groups and generic companies, which are opposing the patent claim of the US-based drug major Gilead Life Sciences on its anti-HIV drug Tenofovir, have found an ally in the US-based NGO - Public Patent Foundation (PUBPAT). The foundation has challenged the patent grant for Tenofovir in the United States Patent and Trademark Office (USPTO) on the same grounds as that of Indian NGOs. In May 2006, Indian NGOs - Delhi Network of Positive People and Indian Network for People Living with HIV/AIDS along with generic company Cipla - filed pre-grant opposition to Gilead's patent application in India on the ground of lack of novelty and prior art. The US NGO with USPTO also challenges four key HIV/AIDS drug patents held by Gilead for Tenofovir Disoproxil Fumarate (TDF) on the same grounds. The fight for Tenofovir patents in India is keenly watched by all Indian companies that have the capability to manufacture the generic version of the drug.

#### India: Merck to start clinical trial of new drugs

Merck Sharp & Dohme (MSD) Pharmaceuticals, wholly-owned subsidiary of US drug major Merck & Co, is planning to initiate clinical trials on all new drugs that are in the final phase of global trials, in India. These include drugs meant to treat atherosclerosis, HIV, insomnia, obesity, diabetes and osteoarthritis. Negotiations at various levels are on with domestic clinical researchers to kick-start the trials. MSD has eight drugs that are undergoing Phase III clinical trials in the US. The branded ones among the list are Gabozadol, Janument and Arcoxia. The company, which has a clinical research tie-up with Indian Council of Medical Research (ICMR) for its cervical cancer vaccine Gardasil, is now initiating research on its diabetic drug DPP-4 in three centres of the country.

#### India: GlaxoSmithKline signs outsourcing deal with TCS

GlaxoSmithKline (GSK), Britain's largest drug company, has signed an outsourcing deal with Tata Consulting Services (TCS) to establish a drug development support facility in Mumbai. TCS will support GSK's global clinical research and development programme by providing outsourced data management and medical trial reporting services. The arrangement will create nearly 100 new jobs on an existing site and the deal is understood to be worth more than £10m. According to Amber Salzman, senior vice-president of development operations at GSK, the company had picked TCS as a partner because of its strong record in knowledge process outsourcing and operational excellence. Like many global companies, GSK has been seeking to tap into India's pool of high-quality IT and scientific talent and is aiming to trim costs through outsourcing.

#### India: AstraZeneca's new process research and development centre leverages Indian chemistry

AstraZeneca is leveraging the process chemistry expertise accumulated in India's generics industry and universities by opening a US\$15m process research and development (PR&D) laboratory next to its existing research centre for tuberculosis in Bangalore. The Bangalore laboratory will both consolidate the existing drug discovery programme for tuberculosis at the site and bolster the UK Company's global PR&D network. This consists of one facility apiece in the UK and Sweden, plus a pending UK PR&D laboratory at AstraZeneca's Macclesfield site that is expected to start operating by mid-2009. According to AstraZeneca, the co-location of Discovery and PR&D at Bangalore will help the company to maximise scientific interactions and enable shared use of the PR&D infrastructure. All the same, the

company, its current tuberculosis research programmes are still three to four years away from delivering a candidate drug for human trials.

**India: Ranbaxy receives FDA approval to market loratadine antihistamine**

Ohm Laboratories Inc, a wholly owned subsidiary of Ranbaxy Laboratories Limited (RLL), announced that RLL has received approval from the US Food and Drug Administration to manufacture and commercialise its Loratadine Orally Disintegrating Tablets. The antihistamine previously made the switch from the prescription to the OTC market. The Division of Bioequivalence has determined Ranbaxy's Loratadine Orally Disintegrating Tablets, 10 mg, to be bioequivalent to the reference listed drug, Claritin(R) Reditabs(R), 10 mg, of Schering Plough Healthcare Products. Loratadine is a long-acting antihistamine agent, which, in the orally disintegrating form, has annual sales of US\$58.7m.

**India: Alembic to up tablet/capsule capacity from 1bn to 1.8bn**

Alembic Limited plans to increase its tabletsapsule production capacity from the present 1 billion per annum to 1.8 billion tabletsapsule at its formulation manufacturing facility in present year. In next three years, the company plans to raise its production capacity to 5 billion per annum tabletsapsule. The company aims to increase its market footprint to other foreign markets like Brazil, Russia, Australia and South Africa. The company's domestic formulations contributed 68% of the revenues, while exports were at 18%. However, the company plans to create its international presence in next five years and with 60% business from exports.

## Product Focus – Voltaren (Diclofenac sodium)

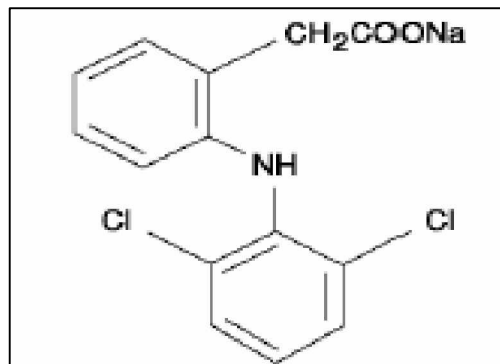
Brand Name: Voltaren

Generic Name: Diclofenac sodium

Manufactured By: Novartis

Empirical Formula: C<sub>14</sub>H<sub>10</sub>Cl<sub>2</sub>NNaO<sub>2</sub>

Molecular Weight: 318.14



Voltaren are nonsteroidal anti-inflammatory drugs (NSAIDs) used to relieve the inflammation, swelling, stiffness, and joint pain associated with rheumatoid arthritis, osteoarthritis (the most common form of arthritis), and ankylosing spondylitis (arthritis and stiffness of the spine). Voltaren-XR, the extended-release form of Voltaren, is used only for long-term treatment.

### Chemical Structure

Voltaren's anti-inflammatory/ analgesic action is mediated through inhibition of prostaglandin (chemical mediator of pain) synthesis through inhibition of cyclooxygenase (COX) enzyme.

### Mechanism of Action

Diclofenac is a nonsteroidal anti-inflammatory drug (NSAID) effective in treating fever, pain, and inflammation in the body. As a group, NSAIDs are non-narcotic relievers of mild to moderate pain of many causes, including injury, menstrual cramps, arthritis, and other musculoskeletal conditions. Since the response to different NSAIDs varies from patient to patient, it is not unusual for a doctor to try different NSAIDs for any given condition.

### Indications

Voltaren (diclofenac sodium enteric-coated tablets), is indicated:

- For relief of signs and symptoms of osteoarthritis
- For relief of signs and symptoms of rheumatoid arthritis
- For acute or long-term use in the relief of signs and symptoms of ankylosing spondylitis.

### Voltaren Side effects

- Abnormal renal function
- Anemia
- Dizziness
- Edema
- Headaches
- Rashes and tinnitus

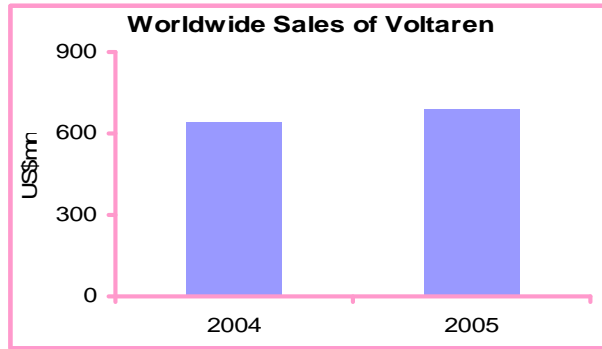
A Joint Initiative of **IPA** and **Cygnus** to enable Pharma Professionals to be more successful

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### Market Performance

The sales of Voltaren grew by almost 8% to US\$689m in 2005 as compared with US\$638m in 2004. This was due to a good US cough-and-cold season as well as higher sales of Voltaren in Europe. The growing incidence of Central Nervous System (CNS) lifestyle disorders the world over is one of the prime drivers of the sale of Voltaren.

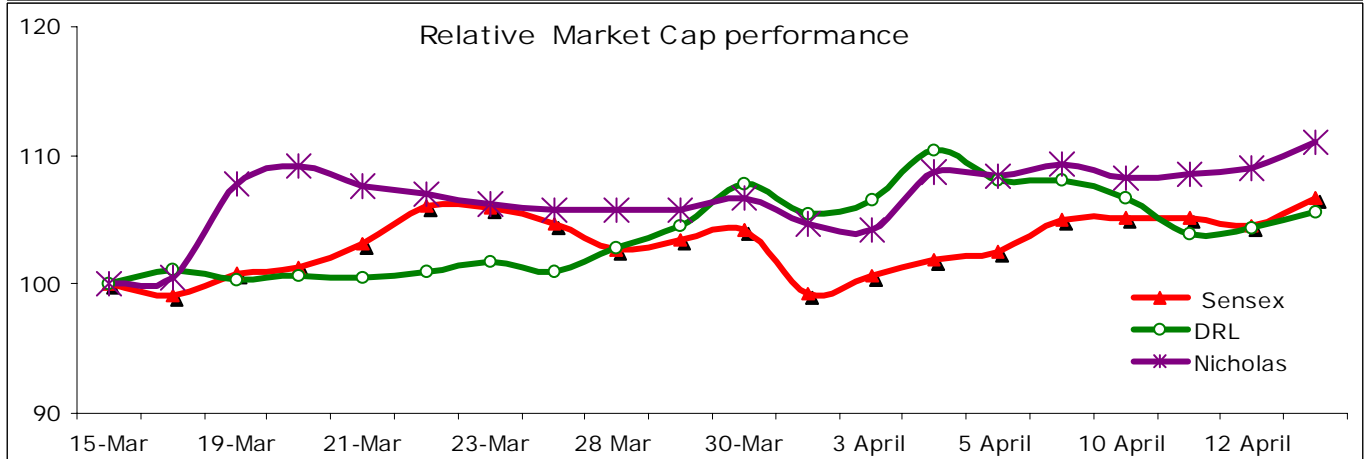
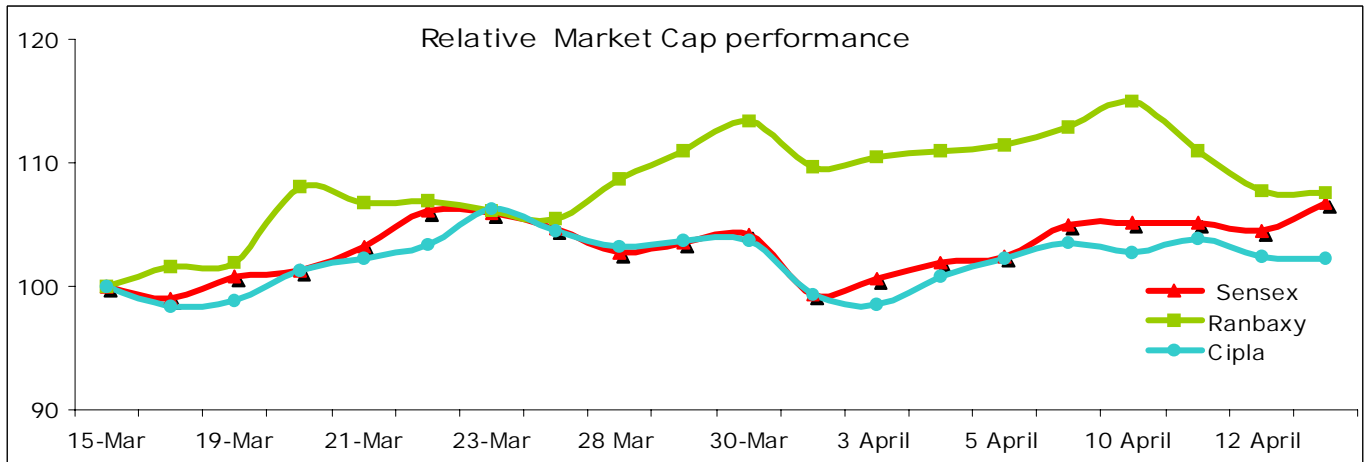


Source: Novartis Annual Report

### Outlook

Voltaren expectedly came under increased pressure from generics and the introduction of new competitor products. The growing incidence of Central Nervous System (CNS) lifestyle disorders the world over is one of the prime drivers of the sale of Voltaren. It is off-patent in the US and many other countries and is definitely going to have a declining sales figure in the coming year.

## Stock Scan



Source: www.bseindia.com; Cygnus Research

Stock\Date Range	Mar 15- 22	Mar 23-30	Mar 31-Apr 06	Apr 07-13
Sensex	Gained strength backed by sustained buying interest in frontline stocks and remained steady throughout the week	Inflation pressure pulled the Sensex down	Impact of RBI rate hike and intense selling pressure witnessed across board	Sensex Trading in the negative terrain, on the back of selling activity in index heavyweights
Ranbaxy	It got the USFDA approval for Zoldipem tablets and filed patent suit against Pfizer in 17 countries over Lipitor	Launched Osovair in India and announced to launch Lipitor drug in 2010	Announced to take stake in Jupiter Biosciences, and discussions are running for marketing agreements	Received an approval to manufacture and market RAN Cefprozil Tablets
Cipla	It left the race for Merck's generic biz	It was fined by NPPA for overcharging five price controlled drugs	Marketing expansions were absent	Moving on par with the sensex
DRL	Moving on par with the sensex	Moving on par with Sensex	Zolpidem approval was expected	Quarter result expectations made scrip go high
Nicholas	A US\$50m investments in UK were announced	Moving on par with Sensex	Moving on par with Sensex	It announced 25% dividend

## Regulatory Issues

### INTERNATIONAL

USA: FDA approves antibiotic ointment for children and adults

The Food and Drug Administration (FDA) approved Altabax for topical treatment of impetigo, a skin infection caused by bacteria. Altabax is indicated for use in patients aged nine months or older. Retapamulin is a new molecular entity (NME) not previously approved in the United States. The safety database contained approximately 2,000 Altabax-treated adults and children aged nine months and older and about 1,000 similar patients who received different antibiotics or placebo. The most common Altabax-related adverse event was irritation at the site of the application, which occurred in less than two percent of the patients.

USA: DMF for ScinoPharm's docetaxel

Active pharmaceutical ingredient (API) specialist ScinoPharm has been assigned a drug master file (DMF) number for its anti-cancer ingredient docetaxel, the first such designation for the API in the US. Docetaxel is used to treat a broad range of cancers and is the active ingredient in Sanofi-Aventis' drug treatment, Taxotere. ScinoPharm may be the first to obtain a DMF number for docetaxel, others may not be far behind. The drug generated net sales of €1.8 billion for the Sanofi in 2006, but is due to start losing patent protection at the end of this year, opening up the market for generic competitors and expanding the potential customer base for ScinoPharm's docetaxel product. The company is looking to cash in on the rapidly growing oncology market, which it predicts to expand becoming the second largest market in the pharmaceutical industry by 2010.

Fines and imprisonment for drug fakers in the EU

The European Parliament has backed proposed legislation to impose hefty fines and penalties on criminals taking part in piracy and counterfeiting activities. If the proposals are officially approved, the directive will require all EU member states to consider all infringements of intellectual property carried out on a commercial scale as a criminal offence, and hand down the appropriate penalties. According to a European Parliament spokesperson, parties found guilty of drug counterfeiting which falls under the category of an offence carrying a health and safety risk would suffer the most serious punishments under the proposed legislation.

#### Europe welcomes RFID with new guidelines

The European Commission has finally proposed guidelines for the implementation of radio frequency identification (RFID) technology in the EU. The commission proposes in particular to address the privacy concerns of citizens to boost consumer confidence and Europe's position in a market experiencing 60% growth globally. It will create an RFID Stakeholder Group to provide advice and assistance in developing a European policy position concerning RFID applications. From fighting counterfeits to better healthcare, smart RFID-chips offer tremendous opportunities for business and society. According to the Commission, the market for RFID is growing rapidly and will contribute €7 billion to the EU's coffers by 2016. RFID is a technology which involves tags that emit radio signals as identifiers, and devices that pick up the signal and identify the tags.

#### UK: FDA accepts filing for SkyePharma partner GSK's drug

UK firm SkyePharma announced the US Food and Drug Administration (FDA) has accepted a filing for the extended release formulation of partner GlaxoSmithKline's drug Requip. The new formulation allows the extended release of the drug over a period of 24 hours, creating a once-daily tablet for the treatment of Parkinson's disease. The new product, provisionally named Requip XL 24-Hour, will provide an alternative treatment option to GSK's immediate release formulation of the drug, which is administered three times a day. According to the company, one of the major benefits of the GeoMatrix technology is its ability to be easily incorporated into the production line. The firm claims that GeoMatrix tablets can be manufactured by readily available equipment that can be integrated into widely-used pharmaceutical processes, thus giving firms more control over their own production activities.

## National

#### Centre allocates Rs 50.0bn for healthcare during 2007-08

The Central govt has allocated Rs 17.17 bn for reproductive and child health and another Rs 31.48 bn for the flexible pool under the National Rural Health Mission for the current financial year. The Centre is aiming to upgrade the primary healthcare delivery systems by upgrading the facilities by using a considerable chunk of the total allotments, with a view to implement the Indian Public Health Standards, according to the sources in the Union Health Ministry. According to the latest estimates with the Ministry, India still needed at least 19269 sub-centres, 4337 primary health centres (PHCs) and 3206 community health centres (CHCs) based on the census of 2001. About 50 per cent of the primary health centres are still functioning from rented buildings and had poor working conditions. As per the statistics compiled till 2005, there are 142655 sub-centres, 23109 PHCs and 3222 CHCs, much below the desired level.

#### NABH sets separate quality standards for blood banks

The National Accreditation Board for Hospital and Healthcare (NABH) has prepared separate quality standards for the blood banks. NABH has received 37 new accreditation applications. Out of six accredited hospitals, three are from New Delhi which included Max Super Speciality Hospital, Max Devaki Devi Heart & Vascular Institute and Moolchand Hospital. Two hospitals of Calicut MIMS Hospital at Calicut and Kerala Institute of Medical Science at Trinanthapuram are located in Kerala and B M Birla Heart Research Centre in Kolkata. Currently, all the 37 applications are at different stages of processing and have signed a MoU with ACHS, Australia on the technical matters. The government is also working to bring new regulation in all segments of healthcare delivery. The Quality Council of India (QCI) is looking after the necessary standards in the health sector.

## Upcoming Events

1.	Event	Medical Device Regulations 2007
	Date	May 22 -25, 2007
	Venue	Lloyds Maritime Academy Suite, London, United Kingdom Tel: +44 020 7017 5510
	Highlight	<ul style="list-style-type: none"> <li>• Latest revisions to Medical Devices Directive and their impact on business</li> <li>• Obtaining the CE mark for product</li> <li>• Understanding the difference between the literature route and clinical investigations</li> <li>• Potential pitfalls of labelling, e-labelling and instruction of use</li> <li>• Ensure adequate risk management is in place</li> <li>• Importance of maintaining post market surveillance and vigilance systems</li> </ul>
	Contact Details	The Organizing Secretary, Life Science Customer Services, London, UK Tel: +44( 0) 20 7017 7481; Email: registrations@informa-ls.com ; Web: www.iir-events.com
2.	Event	The CNS Drugs Summit - R&D Excellence
	Date	May 30-31, 2007
	Venue	The Hilton, City Avenue, Philadelphia, USA
	Highlight	It will offer concrete and innovative solutions to the problems of researching and developing new CNS drugs through to their commercialization. Topics that will be addressed so far include slashing attrition rates, using innovative academic models to produce practical proof of concept, reducing costs, effectively managing clinical trials and ultimately reducing the time it takes to market.
	Contact Details	Mark Walker, Global Conference Director Tel: +44 (0) 20 7375 7201; Fax: +44 (0) 207 375 7576 E-mail: mwalker@eyeforpharma.com; Web: www.eyeforpharma.com
3.	Event	43rd DIA Annual Meeting
	Date	Jun 17 – 21, 2007
	Venue	Georgia World Congress Center, Andrew Young International Boulevard, Atlanta,
	Highlights	<ul style="list-style-type: none"> <li>• Global and regional forums for the exchange of information, education, training</li> <li>• Extensive multidisciplinary networking opportunities</li> <li>• Rewarding volunteer leadership experiences</li> <li>• High-quality professional development opportunities</li> </ul> Adaptive Trials/Adaptive Methods.
	Contact Details	Drug information Association, 800 Enterprise Road Suite 200, Horsham, PA 19044-3595. Atlanta. GA. USA. Tel: +1-215-442-6100; Fax +1-215-442-6199; Email: dia@diahome.org; Web: www.diahome.org;
4.	Event	BIO Expo Japan 2007
	Date	Jun.20-22, 2007
	Venue	Tokyo Big Sight, Japan
	Highlights	<ul style="list-style-type: none"> <li>• Automated Workstation (HTS-Related)</li> <li>• Automatic Dispensers/Washers</li> <li>• Drug Discovery &amp; Development/Intellectual Property/Legal Services</li> <li>• NMR , Other Products/Services Supporting Drug Discovery Research</li> <li>• Antibodies/Vaccine/Therapeutic Agents</li> </ul>

	Contact Details	International Bio Forum & Bio Expo Japan Show Management Reed Exhibitions Japan Ltd. 18F Shinjuku-Nomura Bldg.,1-26-2; Nishishinjuku, Shinjuku-ku, Tokyo, Japan. Tel: +81-3-3349-8509; Fax : +81-3-3349-4922; E-mail: bio@reedexpo.co.jp; Web: www.bio-expo.jp
5.	Event	IBC's Drug Discovery & Development of Innovative Therapeutics (DDT)
	Date	Aug 6 - 9, 2007
	Venue	World Trade Center Boston and The Seaport Hotel · Boston, MA
	Highlights	<ul style="list-style-type: none"> <li>• Innovative therapies for cancer</li> <li>• New approaches and emerging therapeutic targets for the CNS field</li> <li>• Exploratory IND and phase 0 for candidate prioritization and getting to FIH</li> <li>• Executive insights in drug discovery &amp; development</li> <li>• Transforming technologies: nanotechnology, imaging, biomarkers</li> </ul>
	Contact Details	The Organising Secretary, Conferences Inc., One Research Drive, Suite 400A, P. O. Box 5195, Westborough, MA 01581-5195, USA Tel. 508 616 5550; Fax: 508 616 5522; E-mail: reg@ibcusa.com; Web: www.drugdisc.com
6.	Event	FIME International Medical Expo 2007
	Date	Aug 15 – 17, 2007
	Venue	Miami Beach Convention Center, Miami Beach, Florida, USA
	Highlights	Showcase company in the world's medical market place. Thousands of qualified medical buyers from all over the world will attend.
	Contact Details	The Organising Secretary, FIME International Medical Exposition, Inc. 3354 Seventeenth Street, Sarasota, United States Of America. Tel: +(1)-(941)-3662554; Fax: +(1)-(941)-3669861; Web: www.fimeshow.com
7.	Event	Overview of Drug Development Training Course
	Date	Aug 20, 2007
	Venue	Hyatt Regency Princeton, 102 Carnegie Center, Princeton, NJ, USA
	Highlights	<ul style="list-style-type: none"> <li>• Recognize the process of discovering and developing new pharmaceutical products.</li> <li>• Describe the activities associated with conducting clinical research and reporting the results and responsibilities of various departments related to these activities. <ul style="list-style-type: none"> <li>• Discuss institutional review, informed consent, and financial disclosure Develop knowledge about concepts and functions associated with ensuring overall quality of studies.</li> <li>• Describe the organization of the FDA, their authority, and interactions with sponsor companies.</li> </ul> </li> </ul>
	Contact Details	Colleen Snyder, Organising Secretary, Drug information Association, 800 Enterprise Road, Suite 200, Horsham, Atlanta. GA. USA. Tel: +1-215-442-6108; Email: Colleen.Snyder@diahome.org; Web: www.diahome.org
8.	Event	FDA Regulatory and Compliance Symposium: Managing Risks - From Pipeline to Patient
	Date	Aug 22 – 24, 2007
	Venue	Harvard University, Cambridge, MA
	Highlights	<ul style="list-style-type: none"> <li>• High-level forum in one of the world's most famous academic settings - will help drug makers prepare for the full impact of the many changes flowing from the FDA and Congress. The Symposium will provide practical solutions to the challenges and risks faced throughout the product life cycle from the drug pipeline to manufacturing to patient</li> </ul>

		<p>delivery.</p> <ul style="list-style-type: none"> <li>• Features of Symposium Drug Safety and Risk Management; Advertising, Promotion and Compliance; or Where the FDA and CMS Meet, Drug and Device Development and Clinical Trials, Compliance and FDA Enforcement.</li> </ul>
	Contact Details	The Organising Secretary, FDA Symposium Office, 3291 West Wilson Road, Pahrump , NV , 89048 Tel: 760-365-0837; Fax: 760-418-8084; Email: registration@hcconferences.com; Web: www.fdasymposium.com
9.	Event	Interphex India & IPA Convention 2007
	Date	Sep 12 – 14, 2007
	Venue	Bombay Exhibition Center, Mumbai
	Highlights	IPA Convention 2007 will provide an educational platform aimed at Indian pharma professionals as well as international players keen to do business in India. The conference will address business, regulatory and manufacturing issues that are at the heart of the Indian Pharma industry and experienced speakers will offer insights relating to key issues and concepts.
	Contact Details	Rahul Deshpande, Reed Exhibitions India 5th Floor, Manek Mahal, Churchgate, Mumbai, India Tel: +91 98 200 02476; Fax: +91 22 220 24261; Email: rdeshpande@reedexpo.com; Web: www.interphexindia.com
10.	Event	2007 PDA/FDA Joint Regulatory Conference
	Date	Sep 24-28, 2007
	Venue	Renaissance Hotel, Washington, D.C.
	Highlights	Apply concepts in the new paradigm of Design Space, Quality by Design, and risk-based approaches to Quality Systems. Implement new strategies with minimal impact on manufacturing, quality and regulatory functions. Comply with new regulations without disrupting the normal flow of processes.
	Contact Details	Judy Bausch, Senior Programs & Meetings Coordinator Parenteral Drug Association, 4350 East West Highway, Suite 200, Bethesda , MD , 20814 Tel: 301.656.5900; Fax: 301.986.1093; Email: bausch@pda.org; Web:www.pda.org