CONSERVATION OF ENERGY

Power and Fuel Consumption

Our operations are not Energy intensive. However the Company has endeavored to optimise the use of energy resources and taken adequate steps to avoid wastage & use latest technology & equipments, wherever feasible, to reduce energy consumption.

TECHNOLOGY ABSORPTION

A. Research and Development

1. Specific areas in which R&D is carried out by the Company

Sun Pharma Advanced Research Company Ltd (SPARC Ltd) works on innovation and new product development for global markets. It undertakes projects in innovative research and technology for new chemical entities (NCE's) or new molecules, and novel drug delivery systems (NDDS).

New Chemical Entities (NCE's)

The thrust areas of research programs for new molecules or new chemical entities (NCE's) are:

> Design and development of therapies for

Allergy

Inflammation

> Design and development of pro-drugs (chemical delivery systems) for currently marketed drugs that have poor oral absorption profile.

Allergy

SUN-1334H is a novel selective histamine H1 receptor antagonist for the therapy of allergic disorders such as seasonal and perennial allergic rhinitis, urticaria, etc.This promising molecule had earlier entered clinical phase, phase II clinical studies have been completed in the USA.

Inflammation

SUN-461 is a locally acting anti-inflammatory glucocorticoid receptor agonist in pre-clinical development for use in the treatment of asthma and COPD. It belongs to the category called "soft steroids".

Pro-drugs

Anticonvulsant/ Modification of absorption

Our lead molecule, SUN-44 is a pro-drug of the currently marketed drug gabapentin which is used for the treatment of neuropathy and seizures. SUN-44 is currently under pre-clinical development.

Muscle relaxant/ Modification of absorption

Our lead SUN-09 is a pro-drug of a currently marketed drug used as a skeletal muscle relaxant for the treatment of spasms related to CNS disorders. SUN-09 is currently under pre-clinical development.

Novel Drug Delivery Systems (NDDS)

In the drug delivery systems research (NDDS) platform technologies that are being developed are:

> Novel device for inhaled drugs

> Controlled release systems

Gastric retention systems (GRS)

Matrix system (wrap-matrix)

> Targeted drug delivery

Nanoemulsions

> Biodegradable injections/ implants

N**ovel device for inhaled drugs**

A newly engineered dry powder inhalation device is under development which would enable convenient and uniform dose administration of drugs for asthma and COPD. The device would be small, convenient to carry and have a simple three step operating sequence - "open-inhale-close". The device is being developed to comply with the US and European FDA requirements.

Controlled release systems

Gastro retentive innovative device (GRID)

An innovative gastro retentive system (GRS) has been devised that allows longer retention of drugs in the stomach and improves gastrointestinal absorption of drugs that have a narrow absorption window. The mechanism for gastroretention is based on flotation, size expansion and mucoadhesion .

Wrap matrix system

A novel platform technology, with a core and coat has been developed that offers gradual and controlled release of medicines that are highly soluble and are required to be administered in high doses. Based on this technology a few ANDA's for controlled release dosage form have been filed with US FDA.

Targeted drug delivery

Nanoemulsion

Nanotechnology based delivery systems (Nanotectons) enable selective delivery of cytotoxic drugs to cancerous tissues. In this technology, drugs are encapsulated within nanoscale carriers derived from biocompatible/ biodegradable polymers and lipids.

This nanoparticle platform technology is at a preclinical development stage, with demonstrated proof of concept.

Biodegradable injections/ implants

Depot formulations using biodegradable polymers obviate the requirement of frequent injections of certain drugs in case of ailments such as hormone dependant cancers. The depot technology developed by us uses long-acting microparticles.

Two peptide drugs formulations using this technology are in development.

2. Benefits derived as a result of the above R&D

These are long term projects, with a higher risk profile compared to generic projects., and typically take 8-10 years to reach market, if at all. NCE's upon commercialization are expected to provide patients with better treatment options or safer side effect profile for the disorders for which these therapies are being developed.

The new drug delivery systems that are being developed are platform technologies that can be used for several different drugs. The eventual commercialization of the products based on these technologies would provide patients with newer dosage forms that are safer, more effective in terms of availability in the body, and easier for the patient to take or to administer.

3. Future plan of action

New Chemical Entities (NCE's)

Allergy –SUN-1334H
- Complete ongoing phase II human trials in the USA for season allergic rhinitis
- Complete studies on metabolism, toxicity etc required for phase III trials
- Carinogenicity study initiation
- likely initiate phase III trials

Inflammation – SUN-461
- Complete the required preclinical and toxicity studies for Investigational New Drug (IND) application
- IND filing with US FDA
- Obtain regulatory approval and commence phase I human studies

Pro-drug – SUN-44
- Complete the required preclinical and toxicity studies for Investigational New Drug (IND) application
- IND filing with US FDA
- Obtain regulatory approval and commence phase I human studies

Pro-drug – SUN-09
- Complete the required preclinical and toxicity studies for Investigational New Drug (IND) application
- IND filing with US FDA
- Obtain regulatory approval and commence phase I human studies

Novel Drug Delivery Systems (NDDS)
N**ovel device for inhaled drugs**
- Design and validation of device
- Clinical trials in humans for semi-regulated markets
- Launch in semi-regulated markets
- IND filing with US FDA

Gastro retentive innovative device (GRID)
- Launch Baclofen GRS in India for which phase I, II & III clinical trials in humans have been completed and approval has been received
- Likely IND filing with US FDA

Wrap matrix system
- Launch controlled release products based on wrap matrix technology after approval is obtained for the ANDA's that Sun Pharma has filed with US FDA,

To develop innovative products based on this technology, take through clinical trials and file these products
Technology overview was presented to US regulatory agencies for one of the ANDA filed with FDA

Nanoemulsion
- To complete technology development for two cytotoxic products that are being studied
- To initiate Phase 1 first in human trials for one cytotoxic drug product.

Biodegradable injections/ implants
- Clinical trials in humans in India completed.
- Launch in semi-regulated markets
- Complete preclinical studies for depot injection of GnRH analogue that is being developed. Likely take it for Clinical trials in humans

4. Expenditure on R&D	**Year ended 31st March, 2008 Rs in Thousand**	Year ended 31st March, 2007 Rs in Thousand
a) Capital	**38,876**	**—**
b) Revenue	**408,219**	17,339
c) Total	**447,095**	17,339
d) Total R&D expenditure as % of Total Turnover	**119.3%**	N.A.

B. Technology Absorption, Adaptation and Innovation

1. Efforts in brief, made towards technology absorption, adaptation and innovation

The Company continues its endeavor for research in the area of Innovative and Novel Drug Delivery System with latest technology and skilled scientific team.

2. Benefits derived as a result of the above efforts e.g. Product improvement, cost reduction, product development, import substitution

Innovative NCE and NDDS programs being undertaken by the company will help in making available new and effective products. These products when commercialised will improve quality of life of patients.

3. Your company has not imported technology since its inception.

C. Foreign Exchange Earnings and Outgo

1. Earnings	**363,810**	**—**
2. Outgo	**148,027**	504