

ENTERPREUNERSHIP  
DEVELOPMENT THROUGH  
MEDICINAL & AROMATIC  
PLANTS



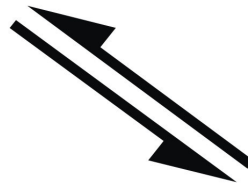
# GROUP



*Thar Biotech Pvt. Ltd.*



Global  
BIOTECH



**Global Education & Research Foundation**

# INCREASING INTEREST

- **Industry**
- **Academia**
- **Health Sciences**



# Now, grow herbal medicine in your backyard

Kounteya Sinha | TNN

**New Delhi:** There's good news for the diehard believers of medicinal plants. You can now have your very own herbal garden on your terrace or backyard, free of cost, thanks to the National Medicinal Plants Board.

The board along with the health ministry and TERI are launching a unique "Home Herbal Gardens" project on Tuesday which will encourage Delhiites to cultivate their own herbal gardens.


**Expecting to familiarise the youth with India's tremendous wealth of medicinal herbs, the National Medicinal Plants Board will launch the project nationally in next few months**

Over 120 Resident Welfare Associations (RWA) will on August 28 be given five baskets of herbal saplings each containing eight best known plants like Tulsi, Brahmi, Ashwagandha, Mint, Lemon Grass, Aloe Vera, Asparagus and Manduk Parni.

Hoping to familiarise youngsters to India's tremendous wealth of medicinal herbs, the board intends to launch the project nationally in the next few months.

B S Sajwan, CEO of NMPD, told TOI that 2 lakh medicinal plants would be distributed in the first phase of the pilot project on Tuesday. "Saplings will also be distrib-

## RETURNING TO NATURE

<p><b>Ashwagandha</b></p>  <p>Natural stress buster, has anti-tumour and antioxidant properties</p>	<p><b>Brahmi</b></p>  <p>Improves memory, treats senility and epilepsy. Is said to be good for hair too</p>	<p><b>Basil</b></p>  <p>Natural air freshener and insect repellent, treats cough and cold</p>	<p><b>Aloe Vera</b></p>  <p>Anti-aging properties, benefits liver and spleen, widely used in cosmetics</p>
<p><b>Manduk Parni</b></p>  <p>Regular use enhances blood circulation system and improves digestion</p>	<p><b>Mint</b></p>  <p>Good for digestive disorders and flatulence, nausea and diarrhoea</p>	<p><b>Neem</b></p>  <p>Removes contamination of blood, treats diabetes, is good for skin too</p>	<p><b>Lemon Grass</b></p>  <p>Antiseptic and deodourising agent, provides relief from menstrual troubles</p>

### Usage Of Medical Plants

RWAs will now be instrumental in promoting them

- 80% population uses plant-based healthcare systems
- One out of four modern drugs plant-based
- US \$62 billion market
- growing @ 7-12%
- US \$5 trillion by 2050
- India's market share less than 1%
- 800-900 plant species are used in trade
- 90% plants are sourced from forests
- India has 17,500 medicinal plants
- Traditional systems use 9,000 plants

uted to residents wanting to plant these herbs on their balconies or in their backyards. Information packs on how to grow these plants and their benefits will also be distributed."

According to Sajwan, the board also plans to tie up with Mother Dairy booths outside colonies and NDMC nurseries to sell these plants at a very nominal rate.

The plants being distributed are known for their medicinal properties. While Aloe Vera gel helps treat burns, skin rashes, insect bites and keeps skin soft and radiant, Basil treats stomach cramps, cough, menstrual pains and stomach acid. Ashwagandha is one of the most popular and widely-used herbs in Ayurveda and is best known for its powers of rejuvenation and anti-inflammatory qualities.

Health minister A Ramadoss said: "Developing the medicinal plant industry, which is expected to be worth \$5 trillion by 2050, is the ministry's topmost priorities now." The minister is now planning to write to all state chief ministers to ask them to develop herbal gardens in important state buildings, like the assembly, secretariat and Raj Bhavan, similar to the one in Rashtrapati Bhavan, with assistance from NMPD.

Prisons with huge amount of free land are also being roped in to revive the fast shrinking population of medicinal plants. Sajwan has already written to all directors-general of prisons to get their captive manpower farm the medicinal plants.

Graphic: Rajender Kamraal

kounteya.sinha@timesgroup.com

# **SECONDARY METABOLITES OF INDUSTRIAL IMPORTANCE**

- **Alkaloids**
- **Steroids**
- **Cardenolides**
- **Sweetners**
- **Bittering agent**
- **Pigments**
- **Fragrances**
- **Agrochemicals**
- **Fine Chemicals**



# Biotech industry to touch \$5 billion in three years

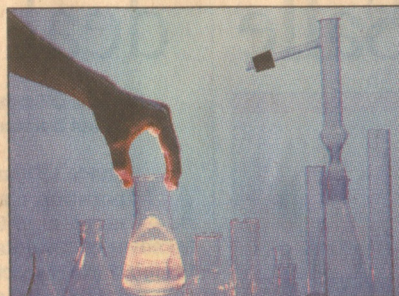
TIMES NEWS NETWORK

**New Delhi:** The domestic biotechnology sector, which closed at \$1.5 billion mark in 2005-06, is expected to touch \$5 billion by 2010. The sector is growing at a CAGR of 35%. Biotechnology by definition is the exploitation of biological process for industrial and other purpose.

At present, India has over 300 biotech firms focusing on different aspects of value chain and their number is going to be more than double in next three to four years, says a release from Assocham.

In a Paper by Assocham on Biotechnology Future, it has been pointed out that although clearly much smaller in size than the IT and BPO sector, the domestic biotech sector is witnessing similar growth and growth prospects. For instance during FY 05-06, the sector closed at around \$1.5 billion, and grew by 35% for the second year in a row.

According to a release, Assocham president Venugopal N Dhoot said, Bio



## MAKING MONEY

pharma in 2005-06, the largest segment of biotech industry grew by 32% to \$1 billion. Exports were at \$763 million, and accounted for 52% share of total industry's revenues. Bio pharma accounted for 75% of the total exports and 70% of domestic sales.

Agri-biotech and bio services are registering the fastest growth. Investments in the sector have crossed \$360 million in

2005-06, growing 36% over previous year.

The paper also points out that India has over 300 biotech firms focusing on different aspects of the value chain. However, about half of the revenues are concentrated with the top 10 firms.

Vaccines and bio-generics are the common areas of interest among leading biotech companies such as Bharat Biotech, Biocon, Dr Reddys Lab, Panacea Biotech, Serum Institute, Shantha Biotech, Workhardt and Zydus.

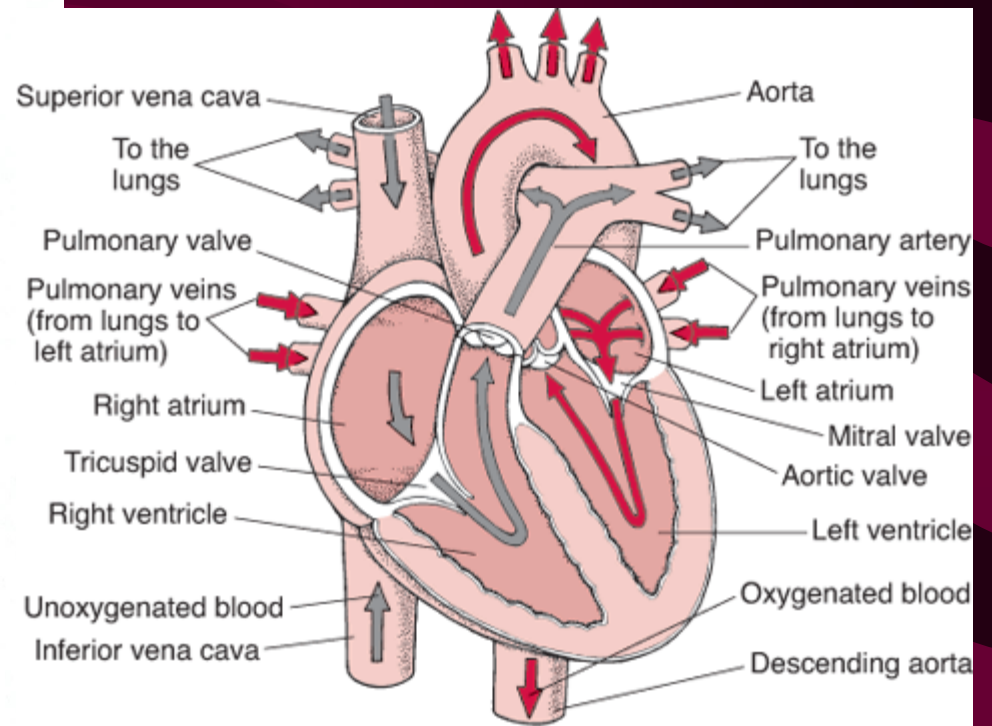
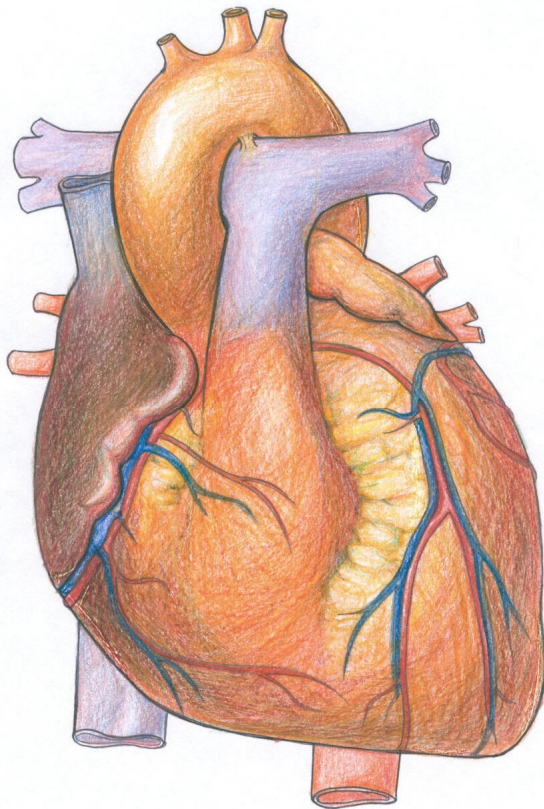
The biotech sector would have the potential to attract funding from international agencies such as World Bank and International Finance Corporation, banks, venture capital funds, private equity, the paper says.

Action has so far has been in pharmaceuticals, but several biologic drugs are expected to go off patent soon, including Epogen, Novolin and Humulin. The focus would be primarily in product categories such as EPO products, Human Insulin, Interferons, G-CSF.

# 3 KEYS

- **EXPLORATION**
- **CONSERVATION**
- **VALUE ADDITION**

# HEART





# 10 crore Indians have high BP

## Hypertension Affects 30% Of Urban And 10% Of Rural Populace

Kounteya Sinha | TNN

**New Delhi:** India is now the country with the most people with high blood pressure in the world. Over 10 crore Indian adults presently suffer from high BP — the measure of the force of blood against the walls of the arteries.

A silent killer that has become the single most important factor causing strokes, heart attacks, diabetes, blindness and paralysis, high BP affects 30% of the country's urban population and 10% of the rural folk.

According to Peeyush Jain, HoD, preventive and rehabili-

tative cardiology at Escorts Heart Research Centre, lifestyle factors, such as physical inactivity, a salt-rich diet with fried and fatty foods, and alcohol and tobacco consumption are some of the main reasons

### SILENT KILLER

behind the epidemic spreading at an alarming rate, from developed countries to economies like India and China.

Jain says: "Around 20% of the adult Indian population is suffering from high BP that is causing an increasing number of brain haemorrhages and re-

nal failures."

Anoop Mishra of Fortis group of hospitals says hypertension is directly responsible for 57% of deaths due to stroke and 24% of deaths caused by heart attack. The disease is presently affecting about 32 million rural Indians and 34 million urban Indians.

"High BP is a ticking time-bomb. India desperately needs a population-based cost effective blood pressure control strategy," he adds. High BP is now also a global problem. Researchers in a study published recently in *Lancet* medical journal predicted that one billion people would have high BP by

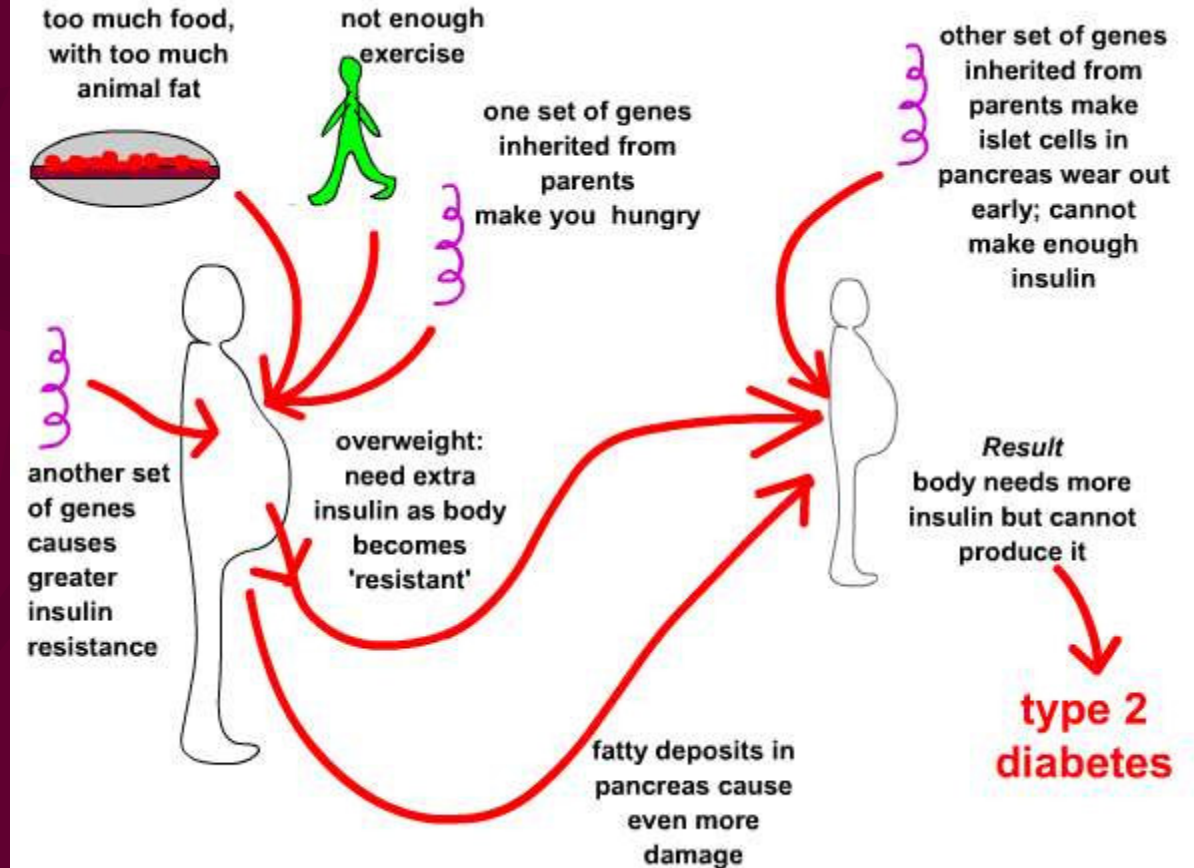
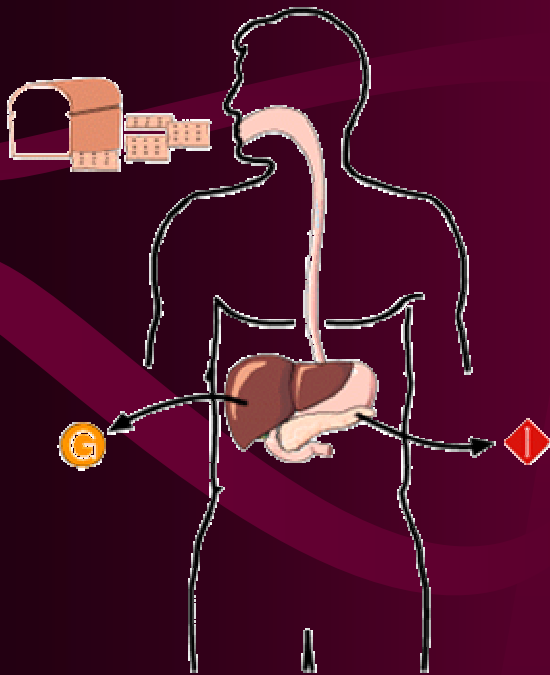
2027. In 2000, the number of people with blood pressure reading exceeding 140/90 mm stood at 972 million.

Cardiologist at Moolchand Hospital K K Agarwal says even a slight reduction of high BP can make a huge difference to a patient's health. "If pre-hypertension is reduced, 40% of heart attacks can be prevented. If 5 mm of BP is reduced, 21% mortality can be reduced. For every kg you lose, your BP will come down by 1 mm. Patients must know that hypertension is a sign that organs in the body are under attack."

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# DIABETES







**Risky pill:** GlaxoSmithKline's diabetes treatment drug, Avandia. India, with the world's largest diabetic population, has 10 drug makers selling versions of the same drug, rosiglitazone.

**ALARMING STUDY**

# Diabetes drug Avandia ups risk of heart attack

**The US drug regulator has already issued a safety alert on the world's largest selling oral diabetes medicine**

By BHUMA SHRIVASTAVA  
bhuma.s@livemint.com  
NEW DELHI

**G**laxoSmithKline Plc.'s diabetes treatment drug Avandia, sold in India as Windia, has rung alarm bells across the world, with a study linking its use to increased risk of heart attack.

Currently, India, with the world's largest diabetic population, has 10 drug makers selling versions of the same drug, rosiglitazone. Some 10 million people across the country use rosiglitazone, or nearly a quarter of the 40 million diabetics.

The furore has been created by a study (see detailed story on Page 18) conducted by Cleveland Clinic's cardiologist, Ste-

ven E. Nissen, and published by the *New England Journal of Medicine*, that has found a 43% higher risk of heart attack in diabetics that took Avandia, compared with other drugs or plain sugar tablets. Nissen looked at a series of past studies as part of his research.

The US Food and Drug Administration (FDA) has already issued a safety alert on the world's largest-selling oral diabetes drug, even as it investigates "contradictory evidence (from various studies) about the risks in patients treated with Avandia". Meanwhile, the UK-based drug maker has pitted in a strong rebuttal of the findings, calling them "absolutely false".

GSK India MD Hasit Joshipura was out of the country, but the company said it "stands firmly behind the safety of Windia when used appropriately, and... believe(s) its significant benefits continue to outweigh any treatment risks. No direct causal relationship

has been established with rosiglitazone (Windia) for the adverse events identified in the data".

The risks in India, experts say, are potentially larger as there are many versions of the drug. Besides GSK, drug majors Sun Pharmaceuticals Ltd, Torrent Pharmaceuticals Ltd, Cipla Ltd, Aristo Pharmaceuticals, Glenmark Pharmaceuticals Ltd, Micro Laboratories, Emcure Pharmaceuticals Ltd, Wallace and Orchid Chemicals & Pharmaceuticals Ltd all sell versions of the drug.

Most of these drug makers are now taking a wait-and-watch approach as researchers, overseas regulators and the drug company battle it out.

The Avandia drug situation also illustrates the pressing need for a drug safety regulatory framework for foreign drugs and their generic variants sold in India. Currently, drugs tests approved by FDA and the UK's Medicines and Healthcare Products Regulator-

ry Authority are accepted as proof of a drug's efficacy by the Drug Controller General of India. To be able to sell generic versions, local drug makers then just have to prove that the specific therapeutic effect of these drugs is the same as the US or UK-approved drug. Further, the Drugs and Cosmetics Act, 1940, the main law that governs pharmaceuticals in India, does not have a provision for recall of drugs already sold or compensation for those affected by consumption of drugs. Citizens have to depend on "common law", which is non-statutory in nature.

Used in India for almost six years, rosiglitazone was hailed as a panacea as it impacted a lot of body parameters such as lipids, levels of inflammation, coagulation and fat levels in liver, besides blood sugar. But it quickly lost favour among scientists as successive studies revealed an increased incidence of "congestive heart failure".

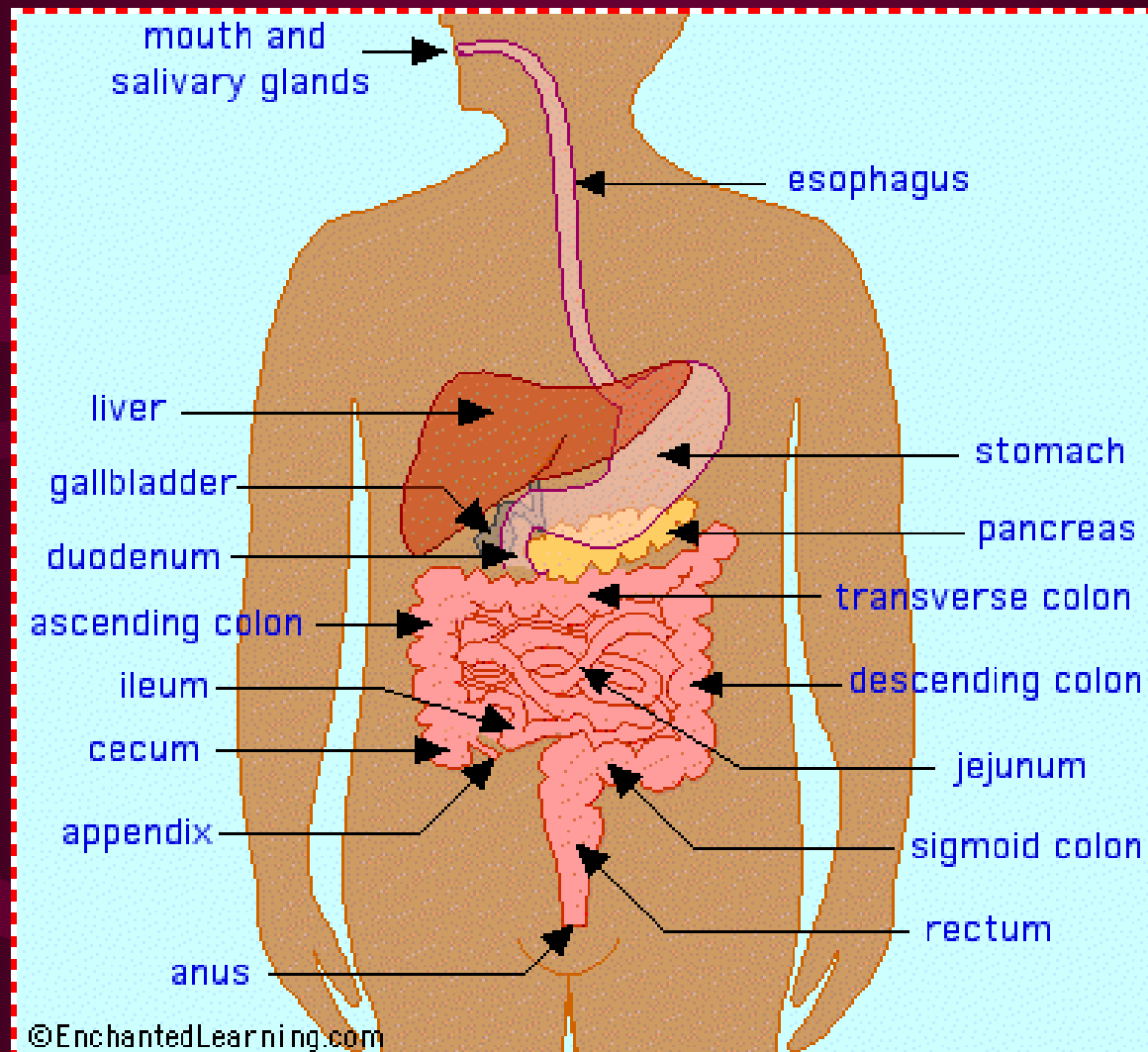
"A series of other studies showed that the drug was very effective, reduced diabetes even in pre-diabetic people and faced least resistance in patients even after sustained use," said Anoop Mishra, an endocrinologist who heads the diabetes department at Fortis Hospital here. "It is an extremely useful drug but one that needs to be prescribed, keeping in mind the cardiac condition of the patient."

A Sun Pharma spokeswoman said there was neither confirmed data nor any complaint that showed increased risk of heart attacks in the users.

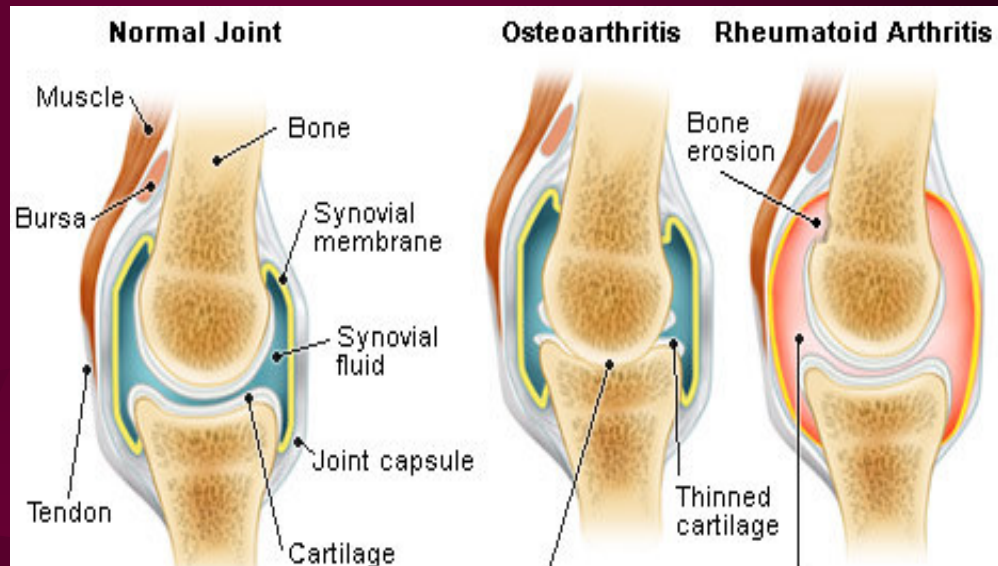
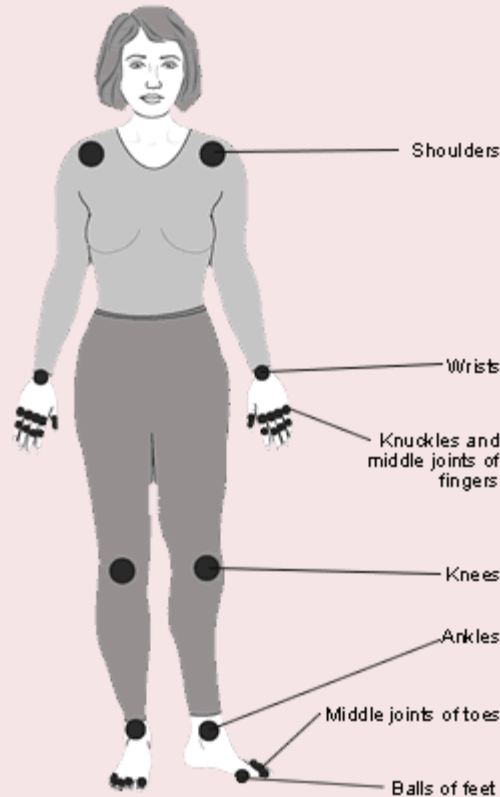
"We have never had any safety problems whatsoever, but we will abide by the drug regulator's orders, if any, on the issue," said a Glenmark executive. The US drug regulator, in its safety alert, did not confirm the clinical significance of the reported risk, but advised patients on Avandia, who are known to have heart disease or are at a high risk for the same, to consult their doctors.



# DIGESTIVE SYSTEM PROBLEMS



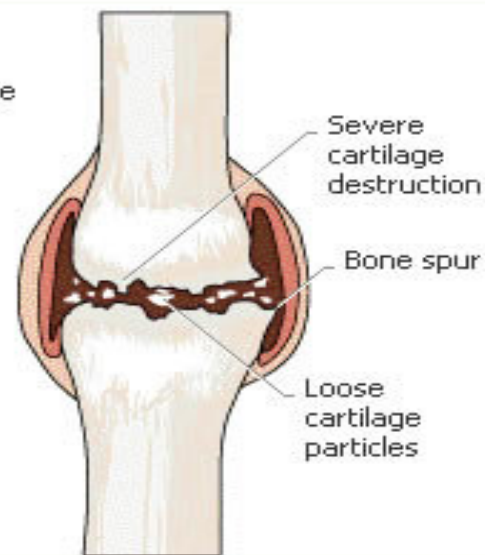
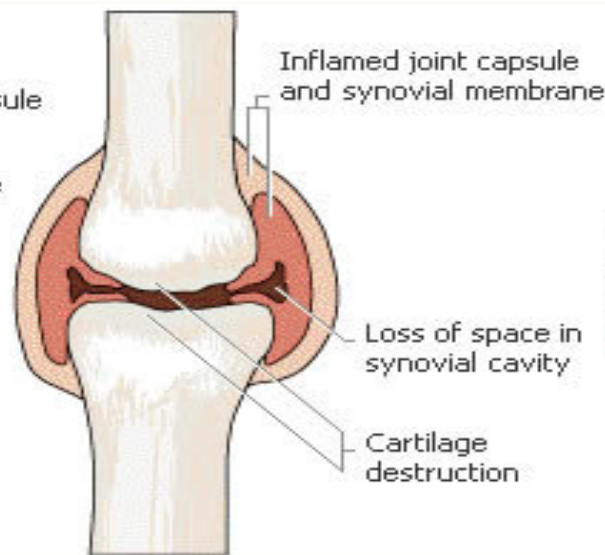
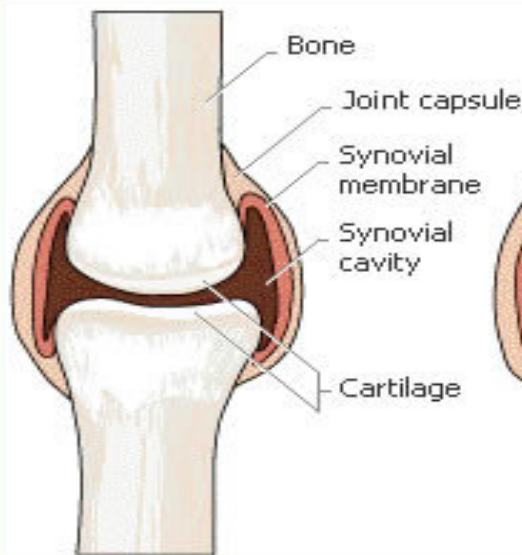
# ARTHRITIS



**Normal Knee**

**Rheumatoid Arthritis**

**Osteoarthritis**



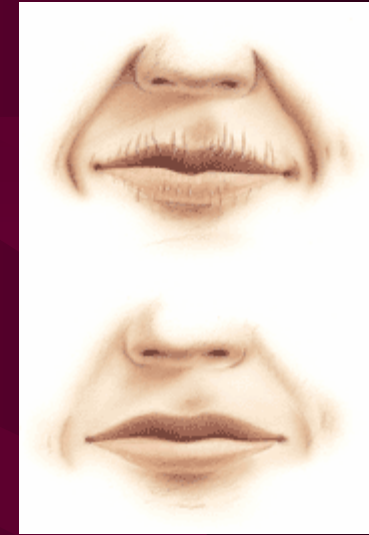
Inflamed membrane

# FAT METABOLISM

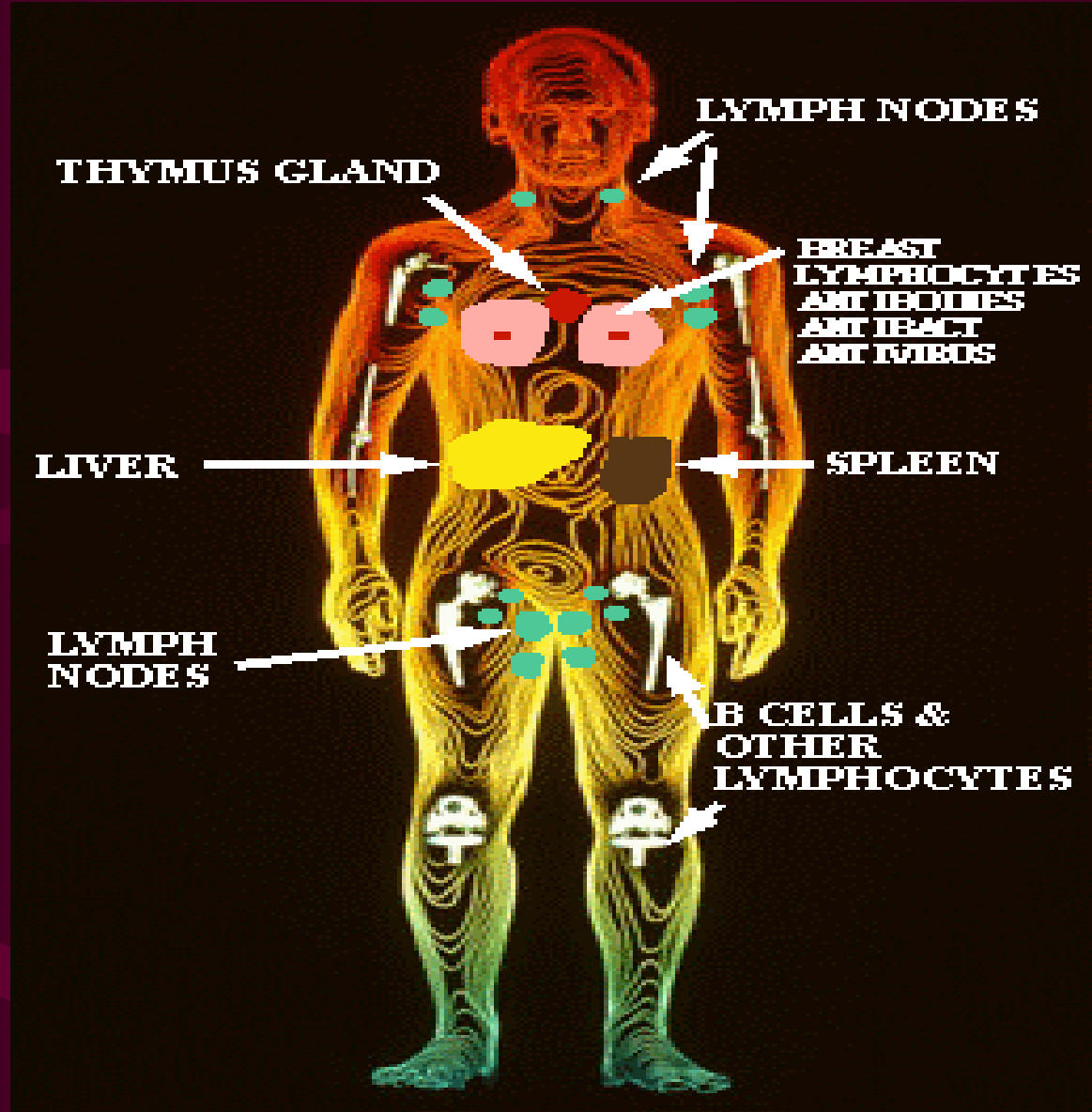




# SKIN PROBLEMS



# IMMUNITY



# **NATURAL HEALTH PRODUCTS, PHYTOCOSMETICS & PERSONAL CARE PRODUCTS**

- **HEALTH FOODS or  
NUTRACEUTICALS**
- **FUNCTIONAL FOODS**
- **COSMECEUTICALS**  
(Skin care, Hair Care and  
Professional cosmetics)



# MARKET POTENTIAL

- Growing Herbs for Medicinal Market has generated lot of INTEREST among Growers
- WTO has estimated \$ 62 Bln Global Market for Medicinal Plants and expects to reach \$ 5 Tln by 2050.
- Planning Commission(GOI) has targeted export of herbs/herbal products Rs 3,000 Cr by 2005 and Rs 10,000 Cr by 2010.
- Spurt in the production of Essential oil catering 30% of the fine chemicals requirements in Flavour & Fragrance Industries (Rs 400 Cr)
- India ranks 26<sup>th</sup> as IMPORTER and 14<sup>th</sup> as EXPORTER of Essential Oils

# DRUGS FROM NATURAL SOURCES

DRUG MOLECULE	PLANT SOURCE	THERAPEUTIC CATEGORY
Vinblastine and Vincristine	Catharanthus roseus	Anticancer
Camptothecin	Camptotheca acuminata	Anticancer
Paclitaxel (taxol)	Taxus bevilfolia	Anticancer
Quinine	Cinchona spp.	Anticancer
Artemisinin	Artemisia annua	Antimalarial
Morphine	Papaver somniferum	Hypnotic, CNS depressant
Codeine	Papaver somniferum	Antitussive and hypotic
Scopolamine	Hyoscyamus niger	Sedative
Caffeine	Camellia sinesis & other Sources	CNS stimulant
Digitoxin	Digitilis lanata	Cardiotonic
Digoxin	Digitalis lanata	Cardiotonic
Thevetin	Thevetia nerifolia	Cardiotonic
Reserpine and deserpidine	Rauvolfia serpentina	Antihypertensive & tranquillizer
Ajmaline	Rauvolfia serpentina	Antiarrhythmic
Quinidine	Cinchona spp.	Antiarrhythmic
Atropine	Atropa belladonna	Anticholinergic
L-Dopa	Mucuna pruriens	Antiparkinsonism
Emetine	Cephaelis ipecacuanha	Antiamoebic
Ephedrine	Ephedra spp.	Adrenergic
Colchicine	Colchicum autumnale	Antigout
Sennosides	Cassia senna	Laxative
Camphor	Cinnamomum camphora	Rubefacient

**WORLD IS LOOSING  
2,50,000 ha OF  
FOREST EVERY  
WEEK**

**SATELLITE STUDY SHOWS  
ONLY 8% OF OUR  
COUNTRY'S TOTAL AREA IS  
UNDER FOREST COVER**



# MEDICINAL PLANTS HABITS

- HERBS (32%)
- SHRUBS (20%)
- TREES (33%)
- CLIMBERS (12%)
- OTHERS (3%)



# CONSTRAINTS

- **Despite vast potential, Nascent Stage**
- **Uncertain and Unorganized MARKET**
- **Prices vary with Demand, Availability and Quality**
- **Non-availability of QUALITY PLANTING MATERIALS**
- **Lack of Development & Extension Support in Cultivation & Processing**

# **PROBLEMS FACED BY CULTIVATORS**

- **Despite vast potential, Nascent Stage**
- **Uncertain and Unorganized MARKET**
- **Prices vary with Demand, Availability and Quality**
- **Non-availability of QUALITY PLANTING MATERIALS**
- **Lack of Development & Extension Support in Cultivation & Processing**



# Medicinal Plants with Enormous Marketing Potential

**Withania somnifera(Ashwagandha)**

**Phyllanthus niruri (bhumi amla)**

**Bacopa munieri(Brahmi)**

**Centella asiatica(Hydrocotyl, analogous to brahmi)**

**Swertia chiraita(Nepali chiraita)**

**Gymnema sylvestris(Gurmar)**

**Nardostachys jatamanasi(jatamansi)**

**Chlorophytum arundinaceum(musli)**

**Rauvolfia serpentina(sarpagandha)**  
**Asparagus racemosus(satavari)**  
**Mucuna pruriens(kawanch)**  
**Acorus calamus(bach)**  
**Andrographis paniculata(kalmegh)**  
**Operculina turpenthum(nishoth)**  
**Psoralea corylifolia(Bawchi)**  
**Plumbago zeylinica(Chitrak)**

**Plantago ovata(Isabgol)**  
**Gloriosa superba(kalihari)**  
**Aloe vera(gwarpatha)**  
**Tribulus terrestris(chota gokharu)**  
**Lepidium sativum(Chandrashoor)**





# MAJOR CONSTRAINTS IN MARKET DEVELOPMENT

- Lack of R&D Facilities for Novel OTC Product development
- Inaccessible technology for production, extraction, and standardization
- Lack of quality control measures
- Ignorance on Supply status
- Limited knowledge of Medicinal Value

# **OUR SUPPORT TO FARMERS**

- **Best Suited SEED/PLANTING MATERIAL**
- **Complete Technical KNOW-HOW**
- **Advice on MULTIPLE TIER Cropping**
- **MARKETING**
- **PROCESSING & VALUE ADDITION**

# OUR SUPPORT TO INDUSTRIES & PROCESSORS

- 1. QUALITY & DEFINED *RAW MATERIAL*
- 2. PROGRAMMED & UNINTERRUPTED *SUPPLY*
- 3. *NECESSARY CERTIFICATION* WITH REGARD TO QUALITY
- 4. CONSIGNMENTS WITH *CERTIFICATE OF ORIGIN*
- 5. COMPLETE PACKAGE FOR *SINGLE HERB PROCESSING & MARKETING*
- 6. ASSISTANCE IN *PROJECT FINANCE*





*Thanks*