

**School of Studies in  
Pharmaceutical Sciences,  
Jiwaji University**

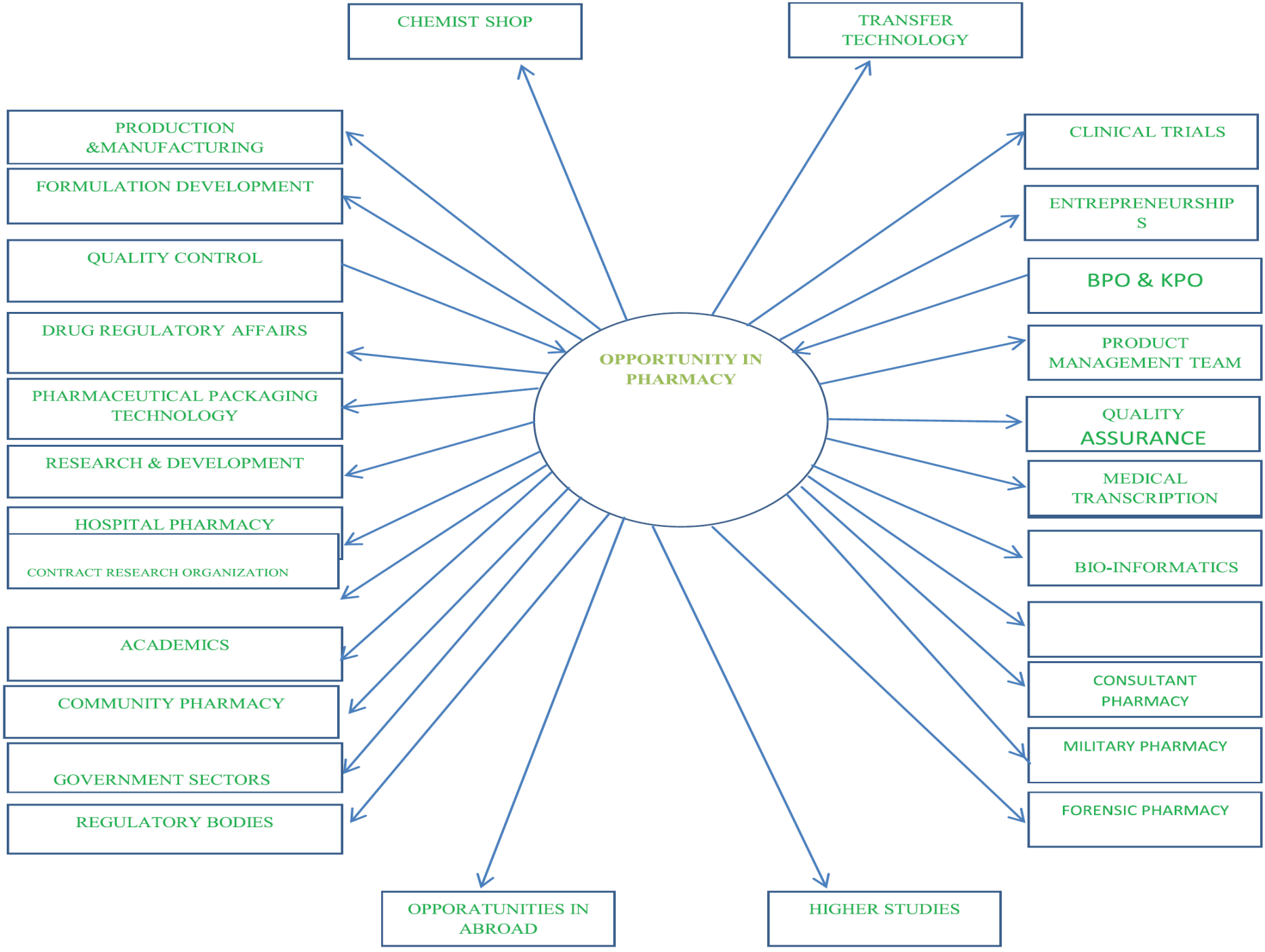
**B. Pharmacy**

**Pharmaceutics**

**Dr. Suman Jain**

# Pharmacy as a Career

- Pharmacy is a part of the medicine field that relates the chemical science with the health sciences. The professionals working in this field are generally called as **pharmacists**.
- Pharmacy field is a very vast growing sector nowadays. Tremendous increase in the rise of various hospitals, pharmaceutical firms and nursing homes all over the country has gradually increased numerous opportunities for the pharmacy graduates.
- The pharmacy field provides a bright career in ways of both a good employment and in terms of beginning own business.



CHEMIST SHOP

TRANSFER TECHNOLOGY

PRODUCTION & MANUFACTURING

FORMULATION DEVELOPMENT

QUALITY CONTROL

DRUG REGULATORY AFFAIRS

PHARMACEUTICAL PACKAGING TECHNOLOGY

RESEARCH & DEVELOPMENT

HOSPITAL PHARMACY

CONTRACT RESEARCH ORGANIZATION

ACADEMICS

COMMUNITY PHARMACY

GOVERNMENT SECTORS

REGULATORY BODIES

OPPORATUNITIES IN ABROAD

HIGHER STUDIES

CLINICAL TRIALS

ENTREPRENEURSHIP S

BPO & KPO

PRODUCT MANAGEMENT TEAM

QUALITY ASSURANCE

MEDICAL TRANSCRIPTION

BIO-INFORMATICS

CONSULTANT PHARMACY

MILITARY PHARMACY

FORENSIC PHARMACY

OPPORTUNITY IN PHARMACY

## **Carrier Opportunities After D. Pharm**

- Working as a drug store pharmacist
- Hospital pharmacist
- Assistant pharmacist in pharm production, quality control (QC) departments
- Medical representative
- Self-employment opportunities (entrepreneurship) by opening own drug store, Ayurveda or cosmetic manufacturing units
- Laboratory technician in pharmacy education institute
- Wholesale pharmacy
- Higher education: Direct admission to B. Pharm II year (lateral entry).

# Higher Studies

- 1) Master of Business Management in Pharm Tech;
- 2) M. Pharm; M. Pharm in Biotechnology;
- 3) M. Pharm in Clinical Pharmacy;
- 4) M. Pharm in Pharmaceutical Analysis;
- 5) M. Pharm in Pharmaceutical Technology;
- 6) M. Pharm in Pharmaceutical Management and Marketing;
- 7) M. Pharm in Pharmaceutical Technology;
- 8) M. Pharm in Pharmacology;
- 9) M. Pharm in QA;
- 10) Master of pharmacy in bulk drug;
- 11) M. Pharm in Medicinal Chemistry;
- 12) M. Pharm in DRA;
- 13) M. Pharm in Industrial Pharmacy;
- 14) M. Pharm in Pharmaceutics;
- 15) M. Pharm in Bio-Pharmaceutics;

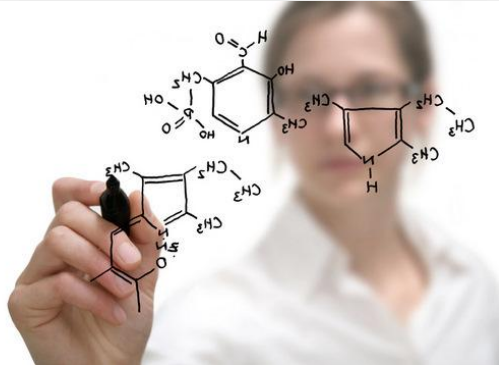
# Higher Studies

- 1) M. Pharm in Pharmacognosy;
- 2) M. Pharm in Photochemistry;
- 3) M. Pharm in Medicinal Natural Products;
- 4) M. Pharm in Pharmaceutical Administration;
- 5) M. Pharm in Pharmacy Practices;
- 6) M. Pharm in Phytopharmaceutical and Natural Products;
- 7) M. Pharm in Drug Discovery and Drug Development;
- 8) MS in Pharmacy;
- 9) MBA in Pharmaceutical Management;
- 10)MBA in Operation Management;
- 11)MBA in Production Management;
- 12)MBA in Pharmaceutical Marketing Management;
- 13)MBA in Heath Care System;
- 14)MSc. in Analytical Chemistry;
- 15)MSc. in Medicinal Chemistry;

# Higher Studies

- 1) MSc. in Pharmaceutical Chemistry;
- 2) MSc. in Pharmacology;
- 3) MSc. in clinical research;
- 4) M. Pharm + MBA duration: 3 years (Dual degree programmed);
- 5) PharmD;
- 6) Ph.D. in Department of Pharmaceutical Sciences;
- 7) PDF

# Industry (R&D)



- R&D Chemist
- R&D Executive
- Research Scientist
- Research Associates
- Group Leader - R&D
- Head - R&D
- Vice President - R&D

## Qualification:

B. Pharm + Many year research experience, M. Pharm, PhD in Pharmacy, Pharm. D



# Formulation Development

- Manager
- Assistant Manager
- Project Assistant
- Research Scientist
- Emerging market scientific manager
- Junior Research Scientist
- Packing Development Scientist
- Analytical method development scientist
- Associate Pharmacist: Drug Delivery Research Laboratory
- Documentation Officer

## Qualification:

- PhD in Pharmacy
- 5 years of R&D experience in formulation
- Skilled in design and development of new drug dosage forms
- Familiar with drug discovery & development technology, policies and regulations
- Good leadership and management skills
- Good interpersonal and communication skills

# Quality Assurance



- QA Inspector
- QA Executive
- Document Controller
- QMS - Coordinator
- Validation - Coordinator
- QA Manager

## Qualification:

B. Pharm, M. Pharm, B. Pharm + Diploma/certified course in QA

# Production



- Production Chemist
- Production Officer
- Production Executive
- Production Planner
- Production Manager
- Vice President - Production

**Qualification:** B. Pharm, M. Pharm, PGDBM, MBA (production management and operation management), B. Pharm + MBA (Pharmaceutical management)

# Quality Control



- QC Chemist
- QC Executive
- Technical Manager: QC
- QC Manager.

## Required Qualification

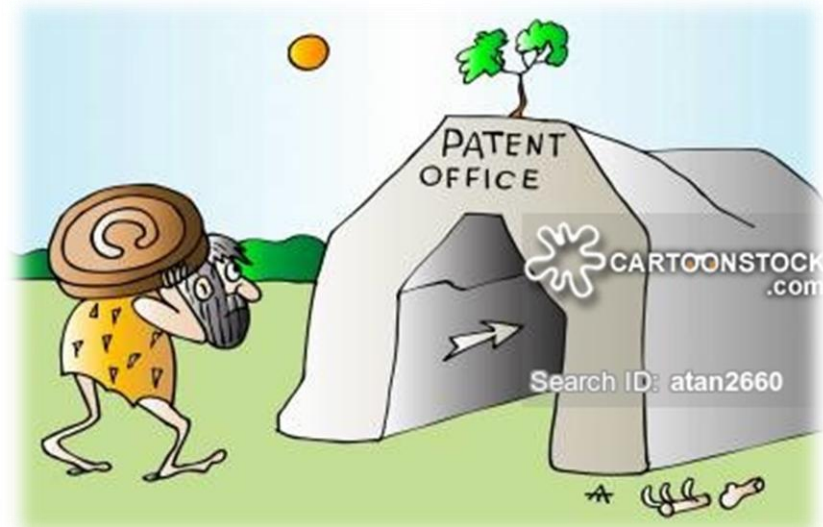
B. Pharm, M. Pharm, MSc. Pharmaceutical Chemistry, MSc. Analytical Chemistry,  
B. Pharm + Diploma in instrumentation/certified course.

# Packaging

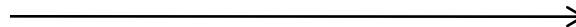


# Patent & IPR

- RA Assistants
- RA Associates
- Documentation Administrators and Medical Information Associates
- RA Consultants for Pharm/Biotechnology Industry
- Regulatory Food Safety Scientist
- Pharmacovigilance Manager
- Drug Safety Specialist



# Technology Transfer

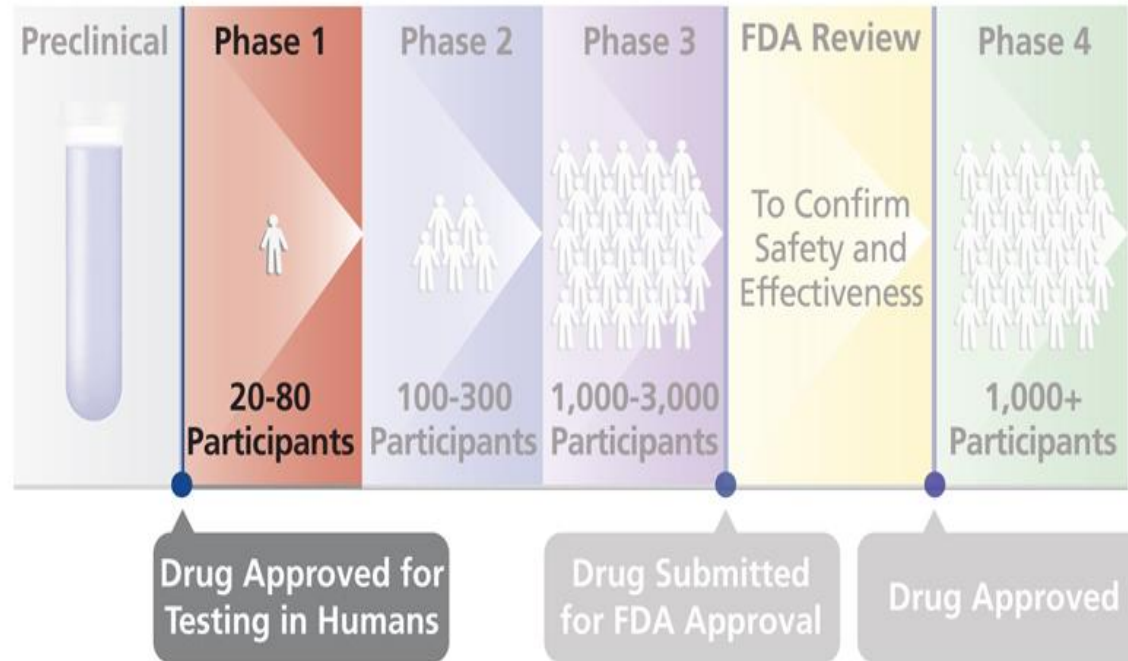


# Clinical Research

## Area of CR

- Clinical trials
- Bioequivalence study
- Pharmacokinetics study
- Toxicological studies

## Clinical Trials



- Clinical Training Analyst
- Clinical Research Monitor
- Clinical Research Associate
- Clinical Affairs: Project Manager
- Clinical Trials Manager
- Clinical Research Coordinator
- Clinical Research Manager
- Patient Recruiter
- QA & QC Manager
- Manager Clinical Operation

## Qualification:

M. Pharm (Clinical Research), M. Pharm (any discipline) + Diploma in clinical research, PhD in clinical pharmacy/pharmacology



# Sales & Marketing



- Sales Officer
- Area Sales Manager
- Regional Sales Manager
- Zonal Sales Manager
- General Marketing Manager
- Manager - International Marketing and Exports

## **Qualification:**

B. Pharm, B. Pharm + MBA, MBA in Pharm marketing, B. Pharm + PGDBM

# Academics



- Assistant Professor
- Associate Professor
- Professor
- Head of Department
- Dean
- Registrar
- Vice chancellor

# Entrepreneurs



**Own Pharma industry**



**Own wholesale dealing**



**Retail shop**

- 1) Acharya Prafulla Chandra Ray, Bengal Chemicals and Pharmaceutical Works (1901)
- 2) Khwaja Abdul Hamied, Cipla (1935)
- 3) Ranbir Singh and Gurbax Singh, Ranbaxy (1937) later bought by Bhai Mohan Singh in 1952
- 4) Ramanbhai B. Patel, Zydus (1952)
- 5) Dr. Desh Bandhu Gupta, Lupin (1968)
- 6) Kiran Mazumdar Shah, Biocon (1978)
- 7) Dilip S. Sanghvi (He won Ernst and Young Entrepreneur of the year 2010 award), Sun Pharmaceuticals (1983)
- 8) Dr. Kallam Anji Reddy, Dr. Reddy's (1984)
- 9) Jagadish Saxena, Elder Pharmaceuticals (1987)
- 10) K Raghavendra Rao, Orchid (1992)

# Cultivation of Medicinal Plants



<b>Institutions</b>	<b>Funding for major areas in medicinal plants research</b>
National Medicinal Plants Board, NMPB	Survey, documentation, cultivation, marketing, conservation
Department of Science & Technology, DST	Taxonomy, ecology, pathology, survey, propagation, documentation, cultivation, conservation
Council for Scientific & Industrial Research, CSIR	Ecology, taxonomy, biochemistry, survey, documentation, cultivation, genetics, agro-technology, conservation
Indian Council of Medical Research, ICMR	Breeding, value addition
All India Council for Technical Education, AICTE	Management technology
Department of Biotechnology, DBT	Agro-technology, molecular biology, biochemistry, rural biotechnology
Defense Research & Development Organization, DRDO	Agro-technology, survey, documentation, conservation
Indian Council of Agricultural Research, ICAR	Breeding, pathology, molecular biology, training the growers
Ministry of Environment & Forest, MoEF	Survey, documentation, conservation, management, ecological impact assessment, cultivation
National Bank for Agriculture and Rural Development, NABARD	Cultivation, marketing
University Grant Commission, UGC	Ecology, biochemistry, survey, documentation
Herbal Research and Development Institute, HRDI	Survey, documentation, nursery development
G.B. Pant Institute of Himalayan Environment & Development, GBPIHED	Survey, documentation, cultivation, conservation

For developing the medicinal plants sector, there is an urgent need to:

1. Document indigenous uses of medicinal plants,
2. Certify raw material for quality control,
3. Develop and improve the agro-technology for valuable medicinal plants
4. Officially recognize and protect the customary laws of indigenous people
5. Prepare a clear policy for granting permits for cultivation within stipulated time
6. Conduct regular research and training on better harvesting and processing techniques

7. Investigate various pathological agents infecting medicinal plants,
8. Setup a community-based management of medicinal plants farming and marketing,
9. Analyze the market policies,
10. Monitor and evaluate the status of medicinal plants with the assistance of local communities,
11. Conserve the critical habitats of rare medicinal plant species, and
12. Share benefits judiciously arising from local people's knowledge on medicinal plants. These attempts may reduce dependency on wild resource base, and generate alternative income opportunities for the rural and underprivileged communities.



# Contract Research Organization

- New Drug Discovery
- Formulation and Development (F and D)
- Clinical Research

## **Bioinformatics**

- Bioinformatics trainee
- Bioinformatics analyst
- Scientist/senior scientist – Bioinformatics
- Team leader – Bioinformatics
- Bioinformatics – Trainer
- Bioinformatics – Lecturer to professor

# Medical Transcription

- Trained medical transcriptionist
- Senior medical transcriptionist
- Proof readers
- Sub editors
- Editors
- Supervisor
- Manager

**Qualification:** B. Pharm

# Consultancy

- RA
- Documentation
- Approvals
- Manufacturing processes
- Analytical series
- Research
- Market surveys and sales promotion
- Information retrieval
- Data management
- Turn key projects, etc

**Qualification:** B. Pharm

# **Documentation, Library Information Services and Pharmacy Journalism**

- QA
- QC
- DRA
- R&D
- Pharmacovigilance
- Clinical trials
- Bioinformatics

**Qualification: B. Pharm**

## **BPO & KPO**

- KPO- Pharma Division – Co-vigilance Executive
- KPO- Pharma and Health Care Division – Customer Care Supervisor
- KPO- Pharma Division – Medical Reviewer or Analyst
- KPO- Pharma Division – MR/Technical Sales Executive or Officer
- KPO- Pharma Division – Hospital Administration and a lot of chances are also there for pharmacy specialists in private as well as government sector.

# Regulatory Bodies

## National Bodies

- Central Drug Standard Control Organization
- Government of India Directory of Health and Family Welfare
- Indian Council of Medical Research
- Minister of Health and Family Welfare
- PCI
- AICTE

## International Bodies

- ICH
- United Nation Health Care Organization
- World Health Organization & World Trade Organization.

## **Hospital / Clinical Pharmacy:**

- Hospital Pharmacist
- Clinical Pharmacist
- Patient Counsellor
- Medical Data Management

## **Consultancy:**

- Own Consultancy
- Employee of Consultancy

## **Entrepreneurship:**

- Public testing lab
- Insurance Companies
- Outsourcing
- Software development
- Scientist
- Herbal Cosmetics  
manufacturing
- Biotechnology

## **Government Jobs:**

### **FDA:**

- Drug inspector
- Food inspector
- Government Analyst

### **Central bodies:**

- AICTE
- PCI
- Research institutes

### **Armed Forces:**

- Air force
- Army
- Coast Guard
- Navy

- **Government Hospitals** – Pharmacist
- **CRPF/ITBP/BSF** – Pharmacist
- **Railways** – Pharmacist
- **Academics-Government Colleges**
- **Govt. pharmaceutical industry** –Production of biological



# Foreign Jobs

- Pharmacist- Pharmacy / Hospital
- Lecturer- Academics
- Scientist- Academics
- R. & D. personnel- Industry