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EDITORIAL'S DESK

Dr. Bharani S Sogali, Editor, APTI Women's Forum Newsletter

Dear women forum members,

Wish you a happy and wonderful new year, 2019!!

A warm welcome to all the members to the first issue of women's forum newsletter, 2019. I am glad to inform you that in this edition, we have very informative article on various Pharmaceutical associations in India. My sincere thanks to Dr. John I.D'Souza, for his precious contribution to this issue for enlightening all women pharma fraternity. I thank Mr. Rahul Hazare for his contribution on Tuberculosis article. Apart from this, we have industry updates, pole to pole, women achievements and research grants information. Indian women are everywhere! Be it sports, entertainment, politics or business! They have been outstanding in their respective fields because they are bold, fearless and ambitious. They have proven that hard work and dedication knows no boundaries. As a country, we are known to be among the biggest hypocrites when it comes to the female sex and their place in society. We included most inspiring women, 2018 in this issue to call for change and to celebrate acts of courage and determination by ordinary women who have played an extraordinary role in the history of India. I wish you a very Happy women's day, 2019. Your suggestions and contributions will help us to improve further. Have a great reading.

INVITED ARTICLE



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Pharmaceutical Associations in India: A Review

Subsequent to beginning of India's first pharmacy class in Medical College, Madras in 1860; in 1923, chemists and druggists in Madras got organised professionally into India's first ever professional organisation, named – 'the Pharmaceutical Association'. In 1925, the name was changed to 'the Pharmaceutical Society of India'. The aims were – to establish federation of qualified pharmacists; to establish uniform system of qualification as pharmacists; to have compulsory registration of pharmacist; to have control over pharmacies; to raise the standards of pharmacy; and to promote interests of chemists. It was

merged into Indian Pharmaceutical Association (IPA) in year 1949.¹

Indian pharma industry has registered a spectacular progress, with market size of \$27.57 billion (reported in 2016), expected to reach a mark of \$55 billion by 2020 at a CAGR of 15.92%. Since inception in early 20's; pharmacy profession has endured many changes, from product to the practice oriented. To promote the interests of the profession or of particular practice settings; various associations have been formed, and are classified as indicated in figure 1.

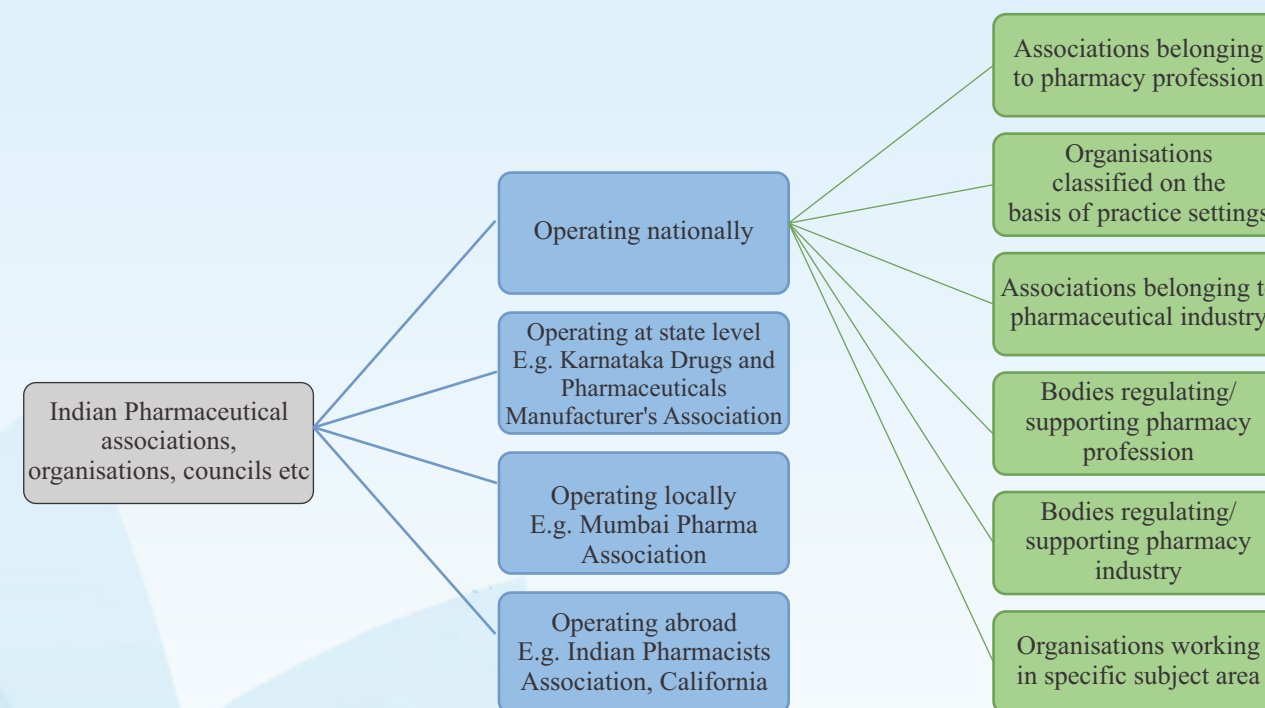


Figure 1: Classification of associations of Indian pharma professionals

• **Associations belonging to Pharmacy Profession in General**

Indian Pharmaceutical Association (IPA): Founded in 1939, IPA is the oldest premier association of pharmaceutical professionals in India, with a member base of over 13000, spread across the length and breadth of the nation; operating through 20 state branches and 46 local branches. As a member of the Drug Technical Advisory Board (DTAB), India, IPA is actively involved in advising the government on matters of professional importance. IPA is affiliated with international pharma associations like FIP, FAPA, CPA, AAPS, AAiPS and is working with international bodies like WHO and WHPA. Through its various divisions - Industrial Pharmacy, Education, Hospital Pharmacy, Community Pharmacy (CPD), Regulatory Affairs; IPA's major objective is to position pharmacists as one of the important healthcare providers in India. The publications of IPA include – Pharma Times, Indian Journal of Pharmaceutical Sciences (IJPS), IPA CPD E-Times and Drug Information Centre Bulletin. Awards and fellowships distributed by IPA are – Eminent Pharmacist, IRF Life Time Achievement, IPA Fellowship, Prof. M.L. Khorana Memorial Lecture Award, Dr. M. Venkateswarlu Memorial Lecture Award, Best Branch Awards, IJPS Best paper awards, Prof. M.L. Khorana Medal, Prof. M.L. Schroff Medal, and IPA ACG Scitech Innovation etc.²

Indian Pharmacy Graduates' Association (IPGA): Established in 1973, IPGA is national level association of Indian pharmacy graduates. It works with the mission – to improve the professional status of pharmacy graduates and to secure their rightful place in pharmacy and allied professions. With 5600 life members and 17 state branches; IPGA has been constantly engaged in conducting activities to update the knowledge and skills of pharmacy professionals. It publishes quarterly newsletter called 'IPGA today'.³

Indian Pharmaceutical Congress Association (IPCA): Founded by Late Prof. M. L. Schroff in 1948; IPCA is a federation of five national pharmaceutical associations viz IPA, IPGA, IHPA, APTI, AIDCOC. IPCA organises Indian Pharmaceutical Congresses, every year with the objectives – to exchange professional updates amongst the delegates, to project the image of pharmacist as a health care professional and to create the awareness about the

pharmacy and pharmacy profession amongst the public.⁴

Indian Association of Pharmaceutical scientists and technologists (IAPST): An association of pharmaceutical scientists and technologists to assist each other and pharmaceutical industries to flourish the pharmaceutical profession; through its discussion groups in various technical areas.⁵

Society of Pharmaceutical Education and Research (SPER): Established in 1973, SPER is a scientific, educational and professional non-profit organisation committed to promote the highest professional and ethical standards of pharmacy and to work for the growth, development and betterment in the field.⁶

Association of Pharmacy Professionals (APP): Established in 2011, APP is an organisation consisting of more than 1000 professionals from all over India and abroad. It operates with 3 international branches (in Ethiopia, Australia, and West Indies) and 11 state branches and 1 local branch.⁷

Indian Pharmacist Association: Based in Delhi, Indian Pharmacist Association is a national level association working for the welfare of pharmacists.⁸

The Doctor of Pharmacy Association (DPA): DPA is a non-profit professional organisation started with an aim to promote the profession of Doctor of Pharmacy through advocacy, education, and communication to improve public health and the quality of life.⁹

• **Organisations Classified on the Basis of Practice Settings**

Association of Pharmaceutical Teachers of India (APTI): APTI is founded in 1966 by leading personalities like Prof. M. L. Schroff, Prof. G. P. Srivastava; with the mission 'to be the best national platform for dealing with all issues related to pharmacy teaching and education in India'. It has come a long way in creating better intercommunication and promotion of excellence in pharmacy education. Through its tailor-made mission and objectives, the association has provided a single platform in bringing together teachers of pharmacy education from all over the country.¹⁰

All India Organisation of Chemists and Druggists (AIOCD): The AIOCD is a dominant organisation

representing nearly 8.5 lakh retail and wholesale chemists in every corner of the country. It is recognised as the only true representative body of the pharmaceutical trade in India. It works for safety, security and prosperity of chemists; supports chemists in broadening their knowledge; represents various forums to mitigate issues with government authorities; prepares members to face challenges arising out of change in trade environment due to impact of GATT, TRIPS, EMR, mergers and acquisitions, co-marketing etc.¹¹

The All India Drugs Control Officers Confederation (AIDCOC): Framed in 1995, AIDCOC works with the mission – to achieve professional excellence through continuous training, better coordination amongst the drugs control officers and more interaction with fellow pharmacists to establish the pharmacist and regulatory officers as vital link in the chain of healthcare delivery.¹²

The Indian Hospital Pharmacist Association (IHPA): Formed in 1963, IHPA is the national professional body of

hospital pharmacists engaged in practice of pharmacy. It is committed to provide a professional forum for hospital pharmacists for securing them their rightful place in the healthcare system and to promote and develop the practice of pharmacy.¹³

Association of Community Pharmacists of India (ACPI): Established with the objects – to organise into an association of all persons engaged in, interested in or connected with community pharmacy.¹⁴

Indian Association of Colleges of Pharmacy (IACP): IACP is a national organisation with the mission to serve its member colleges and their respective faculties; by advocating on their behalf, by providing forums for interaction and exchange of information, by recognizing outstanding performances and by assisting member colleges in meeting their mission.¹⁵

Pharmaceutical professional associations and their headquarters are summarized in figure 2.

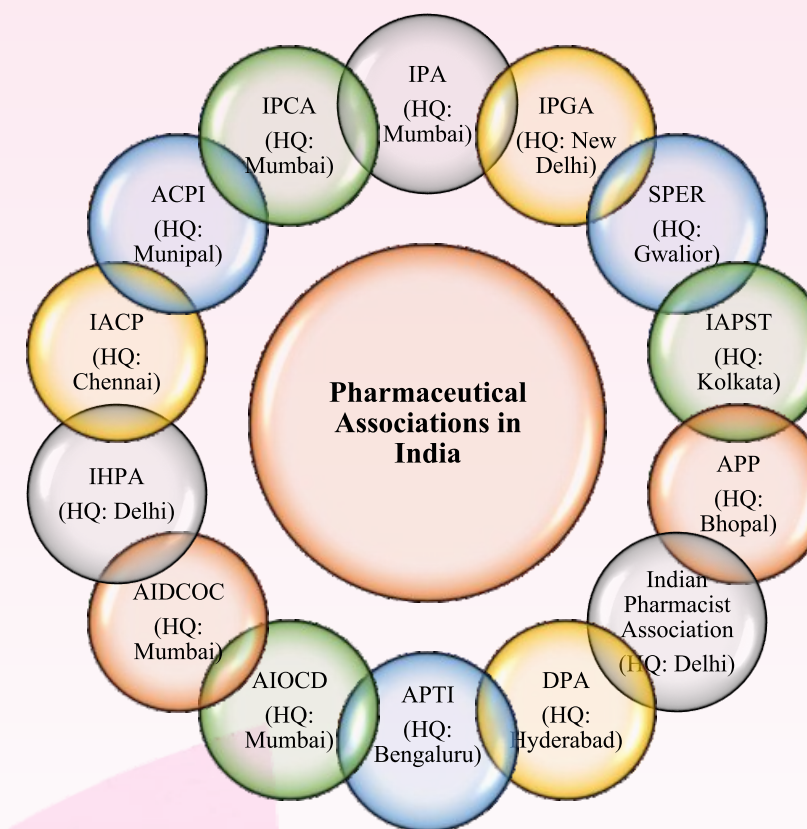


Figure 2: Major pharmaceutical associations in India, with their headquarters

• **Associations belonging to Pharmaceutical Industry**

Indian Drug Manufacturers Association (IDMA): Established in 1961 with the aim providing safe-efficacious-affordable quality medicines. With the membership of over 1000 Indian large, medium and small industries and State Boards; IDMA is considered as voice of Indian pharma manufacturing sector. The publications from IDMA include - IDMA Bulletin, Indian Drugs, IDMA Annual Publication, IDMA-APA Forum, Technical Monographs etc. IDMA is successfully organizing pharmaceutical analysts conventions, seminars, and training programs regularly. Every year IDMA encourages and recognizes excellence in education profession by distributing awards like – IDMA quality excellence awards, IDMA Margi best patent award, IDMA corporate citizen award, IDMA best research and review article award, IDMA J B Mody awards, IDMA-APA eminent analyst award, IDMA-APA outstanding and young analyst awards.¹⁶

Organisation of Pharmaceutical Producers of India (OPPI): Established in 1965; OPPI is committed for supporting the nation's healthcare objectives and collaborating with all stakeholders to find sustainable solutions. It is committed – facilitating greater access to quality healthcare solutions; encouraging research and innovation; disseminating knowledge and sharing best practices; contributing meaningfully in policy dialogues.¹⁷

Federation of Pharma Entrepreneurs (FOPE): FOPE, was been established in the 2006 to address the issue of migrations of pharma units within India due to change in government policies. The organisation since its formation has taken up number of issues like rate of excise duty on finished formulations, fixed dose combinations (FDCs), spurious drugs act amendment bill, DPCO/ NPPA etc., with the concerned departments of (Government of India) GoI.¹⁸

Bulk Drug Manufacturers Association (BDMA): Formed in the 1991, BDMA is an all India body to cater to the needs of the bulk drug industry. The association works for consolidation of the gains of the industry and serves as a catalyst between government and the Industry on the various issues for the growth of the Industry.¹⁹

All India Small Scale Pharmaceutical Manufacturers Association (AISSPMA): Though established well back,

not much is found in the literature about its present status and functions.²⁰

Indian Pharma Machinery Manufacturers Association (IPMMA): Founded in 2001, IPMMA represents specifically the Indian pharmaceutical machinery manufacturers. The aims and objectives of IPMMA are – to work towards the benefit of all the manufacturers of pharmaceutical machinery; and to particularly give encouragement and recognition to small scale machinery manufacturers.²¹

The All India Cosmetics Manufacturers' Association (AICMA): Formed in 1964, AICMA has been the only cosmetic association in India. The objectives of the association are – promoting and protecting the small scale cosmetic industry in India; representing problems faced by the members to the authorities.²²

Ayurvedic Drug Manufacturers Association (ADMA): Founded in 1994, ADMA is recognised as national platform of professionals, technocrats, scientists, industrialists and entrepreneurs in ayurvedic industries. It has been in the forefront of tackling issues concerned to the ayurvedic and natural products industry.²³

The Indian Pharmaceutical Alliance: It was formed with the affiliation from the ASSOCHAM, CII, FICCI and Life Sciences Sector Skill Development Council (LSSSDC). The aims and objectives of the alliance are – partnering with the government in the evolution of a patent regime that will, on the one hand, meet the TRIPs obligations and on the other serve national interest; engaging the government in constructive dialogue to move to price management from price control regime; working with the government in progressively upgrading regulatory regime to suit the country's requirements; assisting the government agencies in carrying out a campaign against spurious drugs.²⁴

• **Bodies Regulating/ Supporting Pharma Profession**

There is a vast list of agencies supporting pharma profession and pharma industry. It is out of the scope of this review to provide ample details of all of them, hence shortly described as below;

Department of Pharmaceuticals (DoP): DoP, created in 2008 under the Ministry of Chemicals and Fertilizers; with the mission '*to make India the largest global provider*

of quality medicines at reasonable prices'. The objective of DoP is to give greater focus and thrust on the development of pharmaceutical sector in the country and to regulate various complex issues related to pricing and availability of medicines at affordable prices, research and development (R&D), protection of intellectual property rights and international commitments related to pharmaceutical sector which required integration of work with other Ministries. One of the mission of DoP is to establish (National Institutes of Pharmaceutical Education and Research) NIPERs.²⁵

Pharmacy Council of India (PCI): Constituted on 9th August 1949 under section 3 of the Pharmacy Act 1948 (PA). The objectives of the council are – to regulate the pharmacy education in the country for the purpose of registration as a pharmacist; and to regulate profession and practice of pharmacy [26].

State Pharmacy Councils (SPCs): SPCs are formed to regulate the profession of pharmacy in the respective state. The functions of the state councils are to grant registration to the eligible pharmacists and to enforce PA and state Pharmacy Council Rules.²⁶

• **Bodies Regulating/ Supporting Pharma Industry**

The Central Drugs Standard Control Organisation (CDSCO): CDSCO; under Directorate General of Health Services, Ministry of Health and Family Welfare (MoH), GoI is the national regulatory authority of India. It's headquarter is located in New Delhi and also has 6 zonal offices, 4 sub zonal offices, 13 Port offices and 7 laboratories spread across the country. CDSCO is responsible for approval of drugs, conduct of clinical trials, laying down the standards for drugs, control over the quality of imported drugs in the country and coordination of the activities of state drug control organisations in the enforcement of the Drugs and Cosmetics Act (DCA), 1940 and rules 1945. Along with state regulators, CDSCO is jointly responsible for grant of licenses of certain specialized categories of critical drugs such as blood and blood products, intravenous fluids, vaccine and sera.²⁷

National Pharmaceutical Pricing Policy (NPPA): NPPA is an organisation of the GoI which was established, inter alia, to fix/ revise the prices of controlled bulk drugs and formulations and to enforce prices and availability of

the medicines in the country, under the Drugs (Prices Control) Order, 1995. It also monitors the prices of decontrolled drugs in order to keep them at reasonable levels.²⁸

Indian Pharmacopoeia Commission: Indian Pharmacopoeia Commission (IPC) is an autonomous institution of the MoH, GoI. Its basic function is to update regularly the standards of drugs commonly required for treatment of diseases. It publishes official documents for improving quality of medicines by way of adding new and updating existing monographs in Indian Pharmacopoeia (IP). It further promotes rational use of generic medicines by publishing National Formulary of India.²⁹

CSIR-Central Drug Research Institute (CSRI-CDRI): CSIR-CDRI is established in 1951 with a vision to strengthen and advance the field of drug R&D in the country. The Institute has made significant accomplishments in the pursuit of its mission '*new drugs and technologies for affordable healthcare for all, generation of knowledge base and nurturing future leaders for healthcare sector'*. The achievements of the Institute includes discovery and development of 12 new drugs, of which, Arteether, BESEB, Centchroman are currently in market; transferred more than 130 indigenous technologies to the pharmaceutical companies, a significant contribution in the metamorphosis of the Indian pharma industry.³⁰

Central Drugs Laboratory (CDL) Kolkata: Statutory functions of CDL are – analytical quality control of the imported drugs available in Indian market, drugs and cosmetics manufactured within the country on behalf of the central and state drug controller administrations and acting as an appellate authority in matters of disputes relating to quality of drug.³¹

Federation of Indian Chambers of Commerce and Industry (FICCI): Established in 1927, FICCI is non-government, not-for-profit organisation; the largest and oldest apex business organisation in India. FICCI provides a platform for networking and consensus building within and across sectors and is the first port of call for Indian industry, policy makers and the international business community. It serves its members from the Indian private and public corporate sectors and multinational companies, drawing its strength from diverse regional chambers of commerce and industry across states, reaching out to over

250000 companies.³²

Confederation of Indian Industry (CII): Founded in 1895, CII, non-government, not-for-profit, industry-led and industry-managed organisation that works to create and sustain an environment conducive to the development of India, partnering industry, government, and civil society, through advisory and consultative processes. It is India's premier business association with around 9000 members, from the private as well as public sectors, and an indirect membership of over 300000 enterprises.³³

Confederation of Indian Pharmaceutical Industry (CIPI): Established in 2001, to protect collective interests of pharma industry and help them realize their goals better and faster. CIPI today is the only body of manufacturers of drugs and pharmaceuticals looking after the interests of all small and medium scale pharma units across the nation. Under its capable leadership CIPI is empowered to make the government take notice of sincere demands of pharma business and even change unjust laws and regulations.³⁴

Pharmaceuticals Export Promotion Council of India (Pharmexcil): Set in 2004, Pharmexcil is the sole agency of the country to issue registration cum membership certificates (RCMCs) to all pharma exporters. The activities of the Council are administered by committee of administration consisting of representatives from pharma industry, national pharma associations like IDMA, BDMA, IPA, ADMA and officials from DoC, DoP, MoH and DBT, GoI.³⁵

The Associated Chambers of Commerce and Industry of India (ASSOCHAM): Initiated in 1920, ASSOCHAM is having in its fold more than 400 Chambers and trade associations, and serving more than 450000 members from all over India. It has contributed significantly by playing a catalytic role in shaping up the trade, commerce and industrial environment of the country. ASSOCHAM has emerged as the fountainhead of knowledge for Indian industry.³⁶

CPhI and P-MEC India: CPhI and P-MEC India is India's biggest event where global pharmaceutical ingredients, products, machines, process solutions etc are put on show.³⁷

International Pharmaceutical Excipients Council of India (IPEC India): Formed in 2010, the IPEC is a global organisation consisting of regional associations organised

to promote quality in pharmaceutical excipients. The IPEC represents the five existing regional IPECs – IPEC Americas, IPEC Europe, IPEC Japan, IPEC China and IPEC India; provides a unified voice to promote the best use of excipients in medicines as a means of improving efficacy and safety.³⁸

Quality Circle Forum of India (QCFI), Pharmaceutical Wing: QCFI is recognised as the institution representing the quality circle movement in India and has represented the country in several international forums.³⁹

International Society for Pharmaceutical Engineering (ISPE) India Affiliate: ISPE is an international educational resources and unparalleled networking opportunities in pharmaceutical engineering. ISPE India affiliate strives to address current engineering issues within Indian pharmaceutical/ biopharmaceutical and medical devices industry.⁴⁰

Drug/ Pharmaceuticals Association Forum: CDSCO through Director General of Health Services, GoI recently issued an office order to constitute Drug/ Pharmaceuticals Association Forum consisting of 2 representatives each (President/ Chairman and Secretary/ General Secretary) of following associations; Indian Pharmaceutical Alliance, IDMA, BDMA, FOPE, CIPI and Laghu Bharatiya Udyog. These representatives will be invited for discussion with Drug Controller General of India (DCGI), every quarter on various issues pertaining to CDSCO.⁴¹

Associations of Indian pharmaceutical industry and bodies regulating/ supporting pharma industry are explained in figure 3 & 4 respectively.

• **Organisations Working in Specific Subject area**

Controlled Release Society Indian chapter (CRS-IC): Established in 1994, CRS-IC is a recognised centre of activity and rated as the second best chapters amongst the 16 local chapters of CRS international. The CRS-IC works with the objective of providing an excellent forum to advance the science and technology of new chemical and biological delivery systems; by organizing national and international symposia/ seminar/ and workshops.⁴²

Indian Pharmacological Society (IPS): Formed in 1966, with the objectives – to foster the science of pharmacology; to promote research in pharmacology and

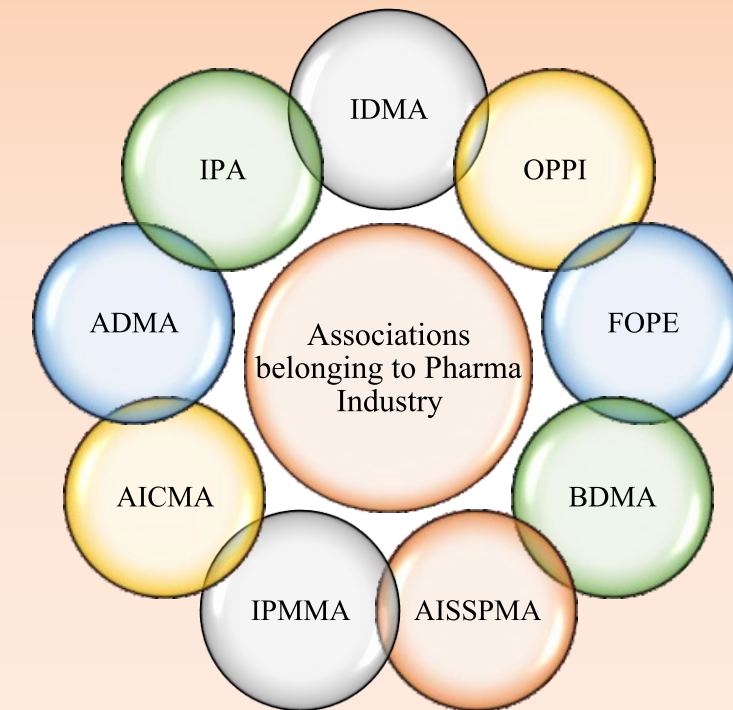


Figure 3: Associations belonging to pharma industry

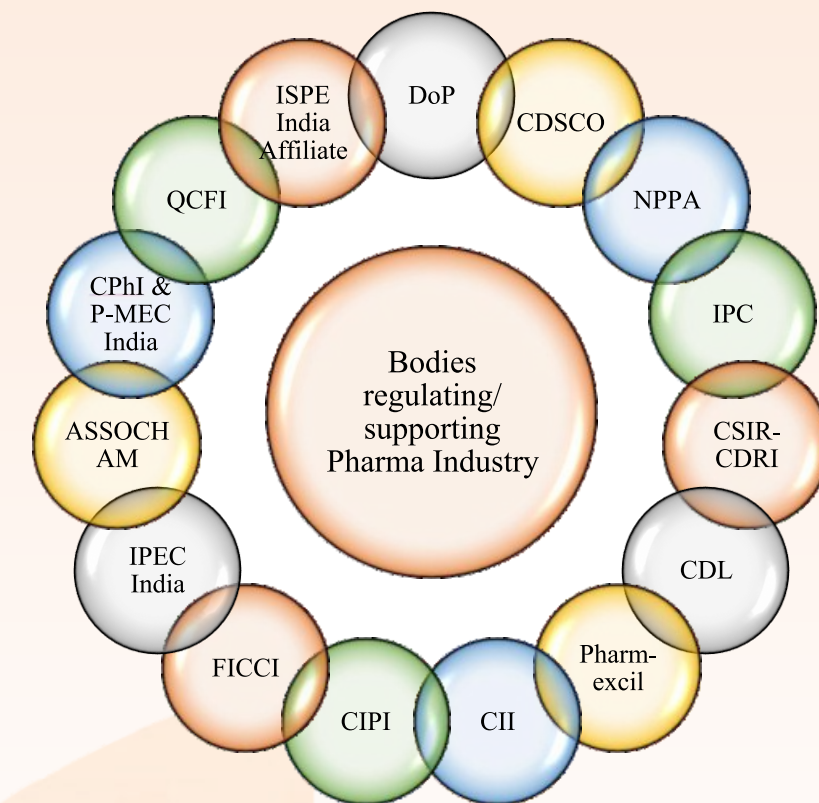


Figure 4: Bodies regulating/ supporting Pharma Industry

allied disciplines, with particular reference to the current health needs of the country and national health policy; and to collect, disseminate and employ the knowledge acquired for the benefit of the country. IPS publishes Indian Journal of Pharmacology.⁴³

Indian Society of Pharmacognosy: Society of Pharmacognosy is a national body of pharmacy professionals belonging to the stream of Pharmacognosy. Every year, society organises a customary annual national convention and once in four year international conference to compile the thoughts of scientists and academicians engaged in pharmacognosy research.⁴⁴

Society for Ethnopharmacology (SFE): SFE is constituted with the vision of providing an environment for knowledge sharing among researchers, healthcare-practitioners, industrialists and decision-makers interested in Ethnopharmacology. The main motto of the society is to dissemination of knowledge on natural health products through globalization of local knowledge and localizing global technologies. The society organises conferences, seminars, symposiums, workshops for discussion and sharing knowledge on natural product research.⁴⁵

CONCLUSION

There are ample number of associations working nationally, internationally, at state level and locally for the benefit of the profession and members of the organisations. Each of these has been observed taking solemn efforts to support, empower the members of their association. Few are in forefront to take up various issues affecting their trade/ business/ professional image etc. to the government authorities. Though the objectives of these organisations are dignified, much more efforts needs to be taken united for enhancing professional image of the pharmacists and recognition of pharmacist as health care team member.

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GENERAL ARTICLE

Tuberculosis at the socialized principal Pharmaceutical Institutions in India without comorbidity in different age groups: An Attractive Findings

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Fellow Indian Council of Medical Research

Executive Summary

The prevalence of chronic, accompanied by a pronounced fibrous component was minimal in young patients group. Thus, reaching the maximum value in the group of early adulthood, the detection rate of chronic forms showed a tendency to decrease with increasing patient age. Forms accompanied by destruction of lung tissue with the formation of cavities¹, showed a similar distribution pattern, thus showing a significant relationship with age. In general, the distribution of the forms with a predominance of alterations is almost a mirror reflection of the forms of distribution with a strong productive component. lung disease in the age groups had often bilateral, reaching maximum values in the group of younger patients, are not demonstrating the existence of any significant association with age².

Note: * - the age and colour of saggy skin of the principal was unknown³.

Abstract

Background. The investigations of pulmonary tuberculosis (TB) often include observations of TB at patients with the burdened comorbid background, which have imprisonment, and homelessness, that strongly change the picture of TB.

Aim: to describe some properties of TB at the socialized patients who did not have comorbid diseases in age aspect.

Materials and methods: 305 protocols of autopsies (2000-2010 yrs.). The significance of differences was checked by nonparametric methods of the statistical analysis. Relation of lethal outcomes with the industrial

enterprises and motor transport was studied with a geographic information system.

Results. The most part of cases of TB in the described group of patients were presented by men of 46-60 years with fibrocavernous TB, mainly bilateral superlobar localization. The TB form was associated with its time duration and duration of the last hospitalization. The quantity of lethal outcomes in general was bound to accommodation near the industrial enterprises and highways. However, the quantity of deaths at sharply progressing forms, unlike observations of chronic forms was not bound to distance to large industrial enterprises. The lethal outcome was determined by cardiopulmonary inefficiency and cachexia. Among patients with acute forms more often a brain edema developed, whereas patients with chronic forms frequently died from lethal pulmonary bleeding. No features of TB in age aspect have been revealed

Conclusion. For the analysis of pulmonary TB as a comparison group is effectually to use TB cases at full-socialized patients without comorbid diseases. Differences of TB at patients of age groups, in our opinion, are caused by diseases that form a comorbid background.

Keywords: pulmonary tuberculosis, comorbidity, age groups, geographic information system.

Introduction

The problem of tuberculosis is still relevant, despite the trend towards a reduction of morbidity [1]. Labor migration entails the delivery of new TB cases and TB epidemic burdening situation. In studies that examine the various features of TB, the analysis is performed in

patients that have burdened comorbidity status, and often social problems - the lack of a permanent place of residence, are or were present earlier in the prison system. In the available literature we have not TB research has been reported in patients socialized with no significant (comorbid) conditions. In our opinion, it is in these "ideal" patients, epidemiological and clinical presentation of TB is devoid of confounding factors that can make a fairly dramatic change in the picture of TB.

Findings

- The main proportion of patients with complete socialization was represented by men of late adulthood without comorbid diseases.
- The most common was a fibro-cavernous TB. Clinical determines the duration of the last hospitalization and was associated with the experience of TB.
- Distribution of TB observations in the city was due to their distance to the city-forming industrial enterprises and highways. Number of observations acute progressive forms, unlike the chronic form was not related to the distance from boundaries of large industrial plants. Patients with both those and other forms mainly resided near major highways.
- Overall, the process was bilateral in nature, apparently, due to acute forms, in which the involvement of the second lung was detected more frequently. In all forms often recorded verhedolevaya localization.
- In the majority of cases have been reported in the screenings parenchymatous organs, thus in observation of acute screenings frequency was higher. The disease is almost always accompanied by bacterial excretion. Lethal outcome advancing, mainly from cardiopulmonary failure and cachexia. Among patients with acute forms most developed swelling of the brain, whereas in patients with chronic forms it was found more frequent fatal pulmonary hemorrhage.
- Age groups did not differ in most of these characteristics with the exception of TB increased frequency of acute progressive forms in young patients. With increasing age, the patient tended to

reduce the frequency of registration bilateral lung lesions, screenings in the internal organs, bacteriological, and cachexia. With increasing age of the patients showed a tendency to decrease in forms characterized by a predominance alterative component of the inflammatory process and formation of cavities in the lungs.

Thus, the difference of TB patients from different age groups, as described by various authors [6] In our opinion, due not tuberculous lesions of the lung, and diseases that form the background of comorbidity. Clinical form of TB is often related to the patient's home and is due to appear, immunosuppression due to exposure to harmful factors, emerging as a result of vehicular traffic and industrial production. For the analysis of pulmonary TB should be used as a monitoring TB control group described the group of persons with a full socialization and zero comorbid background, in particular, do not have a drug and alcohol dependency, diabetes, HIV and lung carcinoma. The study of the characteristics of TB in the aspect of its current phase - the progression of acute and chronic - provides a great opportunity for the analysis of disease.

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POLE TO POLE

- **Drug cocktail turns off the juice to cancer cells**

A widely used diabetes medication combined with an antihypertensive drug specifically inhibits tumor growth - this was discovered by researchers from the University of Basel's Biozentrum two years ago. In a follow-up study, recently published in Cell Reports, the scientists report that this drug cocktail induces cancer cell death by switching off their energy supply.

The widely used anti-diabetes drug metformin not only reduces blood sugar but also has an anti-cancer effect. However, the metformin dose commonly used in the treatment of diabetes is too low to inhibit cancer growth. The previous study of Prof. Hall's group at the University of Basel's Biozentrum revealed that the antihypertensive drug syrosingopine enhances metformin's anti-cancer efficacy.

In the follow-up study, jointly performed at the Biozentrum and Basilea Pharmaceutica International Ltd, the scientists shed light on this phenomenon: The combination of the two drugs blocks a critical step in energy production thus leading to an energy shortage, which finally drives cancer cells to "suicide".

Drug cocktail cripples sophisticated machinery

Cancer cells have high energy demands due to their increased metabolic needs and rapid growth. A limiting factor in meeting this demand is the molecule NAD+, which is key for the conversion of nutrients into energy. "In order to keep the energy-generating machinery running, NAD+ must be continuously generated from NADH," explains Don Benjamin, first author of the study. "Interestingly, both metformin and syrosingopine prevent the regeneration of NAD+, but in two different ways."

Taking a closer look at the mode of action

Many tumor cells shift their metabolism toward glycolysis, which means that they generate energy mainly via the breakdown of glucose to lactate. Since the accumulation of lactate leads to a blockade of the glycolytic pathway, cancer cells eliminate lactate by

exporting it from the cell via specific transporters. "We have now discovered that syrosingopine efficiently blocks the two most important lactate transporters and thus, inhibits lactate export," says Benjamin. "High intracellular lactate concentrations, in turn, prevent NADH from being recycled into NAD+."

Lethal combination

Because the anti-diabetes drug metformin blocks the second of the two cellular pathways for NAD+ regeneration, combined metformin-syrosingopine treatment results in complete loss of the cell's NAD+ recycling capacity. The depletion of NAD+ in turn leads to cell death, as the cancer cells are no longer able to produce sufficient energy. Thus, pharmacological inhibition of lactate transporters by syrosingopine or other similarly acting drugs can increase the anti-cancer efficacy of metformin and may prove a promising approach to fighting cancer.

- **Gene Editing:**

Gene editing is a technique through which genes can be deleted or replaced from one's genome. It is like removing a word in a sentence completely or replacing it with another related or unrelated word, but which would give a meaningful sentence. Eg: Sundays are good days for work Sundays are bad days for work

The most widely used technique of gene editing is called CRISPR, which is an adaptation of methods that bacteria use to kill invading viruses. Then a virus invades a bacterial cell, it keeps a copy of a part of the virus gene within its own DNA. When a similar virus attacks the bacteria, it uses this copy to make a molecule called RNA, similar to the attacking viral gene, which will go and deactivate the virus.

Scientists use similar RNA as a guide to a gene, and bind it with a protein — called Cas9 – which will cut the unrequired gene shown by the guide RNA. Once it is cut, the cell itself repairs the DNA. Or, scientists can place another piece of DNA there with a required function.

It is a cheap, quick and easy way of editing genes. Many diseases are caused by a single defective gene, and they can in theory be cured by deleting or changing a single gene.

Examples are sickle cell disease, where blood cells cannot carry enough oxygen; cystic fibrosis, where the defective gene causes build-up of mucus — mostly — in the lungs and makes it difficult to breathe; and Huntington's disease, a degenerative disease of the brain.

No one has really found a fool-proof method of editing specific genes. Recent studies have shown that CRISPR is not as precise as scientists had once thought. For example, scientists do think that a patient with edited genes stands a higher risk of getting cancer in his/her lifetime.

Editing in embryos can pass on harmful changes to the next generation. This is why scientists themselves have imposed a moratorium on gene editing in embryos.

He Jankui, a scientist working at the Southern University of Science and Technology in Shenzhen, edited embryos to provide babies immunity from HIV. He did it because the father had HIV infection.

Biologists believe that he cannot guarantee that the procedure is safe, and so he has exposed future generations to defects inadvertently carried out during editing.

This is unethical because informed consent is not possible from a future generation. They also think that there were other methods of making sure that the children do not get HIV.

INDUSTRY ROUND UP

- **Health Ministry start to launch a new state-of-the-art Information Platform**

Health Ministry, Ms. Preeti Sudan, Union Health Secretary did soft-launch of the Integrated Disease Surveillance Programme (IDSP) segment of Integrated Health Information Platform (IHIP) in seven states. This is the First-of-its-kind initiative by the Government of India, IHIP uses latest technologies & digital health initiatives. The success of these initiatives will depend mainly on the data shared by other states.

- **Zydus gets final approval from USFDA for Baclofen Tablets, Linglipitein Tablets and Teriflunomide tablets**

Zydus Cadila, a very prestigious company got approval from the USFDA to commercialize Baclofen Tablets (US RLD- Lioresal). Baclofen tablets are primarily used for treatment of muscle spasms caused by certain conditions such as multiple sclerosis, spinal cord injury/disease and helping to relax the muscles. The group now has 234 approvals and so far filed over 340 ANDAs since start of the

filing process in FY 2003-04.

Linagliptin is indicated as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus and will be manufactured at the group's formulations manufacturing facility at SEZ, Ahmedabad. The group now has 236 approvals and has so far filed over 340 ANDAs since the commencement of the filing process in FY 2003-04.

Zydus Cadila has approved from the USFDA to market Teriflunomide Tablets (US RLD-AUBAGIO), 7 mg and 14 mg for treatment of relapsing forms of multiple sclerosis (MS). It works by decreasing certain immune system cells (lymphocytes) which can attack the nerves in brain and spinal cord. This helps decrease the number of flare-ups (relapses) and may help slow down physical problems caused by MS. The group now has 237 approvals and has so far filed over 340 ANDAs since the commencement of the filing process in FY 2003-04.

- **Sun Pharma receives Approval from USFDA for Generic Ganirelix Acetate Injection**

Sun Pharmaceutical Industries Ltd. recently get approval from USFDA for generic version of Ganirelix Acetate Injection, 250 mcg/0.5 ml. As per IQVIA, Ganirelix Acetate Injection, 250 mcg/0.5 mL had annual sales of approximately US\$ 67 million in the US for the 12 months ended September 2018. The commercialization of this product in the US market is expected in Q4FY19.

• **First treatment of rare & life-threatening immune disease receives FDA approval**

U.S. Food and Drug Administration today finally approved the first treatment of Gamifant (emapalumab-lzsg) for the treatment of pediatric (newborn and above) and adult patients with primary hemophagocytic lymphohistiocytosis (HLH) who have refractory, recurrent or progressive disease or intolerance with conventional HLH therapy. Primary HLH is a very rare and life-threatening disease and mainly affects the children and this approval fills an unmet medical need for these patients.

• **Zydus Cadila receives final approval from the USFDA for Three products**

Zydus Cadila get finally approval from USFDA to market Atorvastatin Calcium Tablets in the strengths of 10 mg, 20 mg, 40 mg and 80 mg. Atorvastatin is used along with a proper diet to help lower "bad" cholesterol and fats (such as LDL, triglycerides) and raise "good" cholesterol (HDL) in the blood.

• **FDA approves first treatment for rare blood disease**

The U.S. Food and Drug Administration today approved Elzonris (tagraxofusp-erzs) infusion for the treatment of blastic plasmacytoid dendritic cell neoplasm (BPDCN) in adults and in pediatric patients, two years of age and older.

"Prior to today's approval, there had been no FDA approved therapies for BPDCN. The standard of care has been intensive chemotherapy followed by bone marrow transplantation. Many patients with BPDCN are unable to tolerate this intensive therapy, so there is an urgent need for alternative treatment options," said Richard Pazdur, M.D., director of the FDA's

Oncology Center of Excellence and acting director of the Office of Hematology and Oncology Products in the FDA's Center for Drug Evaluation and Research.

BPDCN is an aggressive and rare disease of the bone marrow and blood that can affect multiple organs, including the lymph nodes and the skin. It often presents as leukemia or evolves into acute leukemia. The disease is more common in men than women and in patients 60 years and older.

The efficacy of Elzonris was studied in two cohorts of patients in a single-arm clinical trial. The first trial cohort enrolled 13 patients with untreated BPDCN, and seven patients (54%) achieved complete remission (CR) or CR with a skin abnormality not indicative of active disease (CRc). The second cohort included 15 patients with relapsed or refractory BPDCN. One patient achieved CR and one patient achieved CRc.

Common side effects reported by patients in clinical trials were capillary leak syndrome (fluid and proteins leaking out of tiny blood vessels into surrounding tissues), nausea, fatigue, swelling of legs and hands (peripheral edema), fever (pyrexia), chills and weight increase. Most common laboratory abnormalities were decreases in lymphocytes, albumin, platelets, hemoglobin and calcium, and increases in glucose and liver enzymes (ALT and AST). Health care providers are advised to monitor liver enzyme levels and for signs of intolerance to the infusion. Women who are pregnant or breastfeeding should not take Elzonris because it may cause harm to a developing fetus or newborn baby.

The labeling for Elzonris contains a Boxed Warning to alert health care professionals and patients about the increased risk of capillary leak syndrome which may be life-threatening or fatal to patients in treatment.

The FDA granted this application Breakthrough Therapy and Priority Review designation. Elzonris also received Orphan Drug designation, which provides incentives to assist and encourage the development of drugs for rare diseases.

The FDA granted the approval of Elzonris to Stemline Therapeutics.



• **Mrs Manjiri Gharat, receives Prestigious Ishidate Award of Federation of Asian Pharmaceutical Associations (FAPA)**



Mrs Manjiri Sandeep Gharat is the recipient of the prestigious Pan-Asian Ishidate Award for Community Pharmacy at the 27th FAPA Congress held in Manila, the Philippines on October 25, 2018.

The award is given in recognition of the exemplary contributions to the profession and improvement of society in line with the mission of FAPA in Asia. Mrs Gharat also delivered a talk on Community Pharmacists' Advancing Role in Patient Care.

The Indian Pharmaceutical Association (IPA) had nominated Mrs Gharat for this award. She is the Vice President and Chairperson of Community Pharmacy Division of IPA. She is also the Vice President of

Community Pharmacy Section of the International Pharmaceutical Federation (FIP). She is an academic working with Prin K M Kundnani Pharmacy Polytechnic, Ulhasnagar, Maharashtra as Vice-Principal.

Manjiri Gharat has been active in the area of community pharmacy and consumer medicine education. She was instrumental in establishing public-private partnership engaging community pharmacists in TB DOTS programme. Mrs Gharat is also involved in professional development of pharmacists through Good Pharmacy Practices (GPP), to help them play a vital role in public health and to promote responsible use of medicines by pharmacists and patients. She is known for her keen interest to involve pharmacy students in public health activities and known for newer experiments in teaching-learning process at Diploma in pharmacy level. She has been regular pharma columnist in regional newspapers and has a book "Aushadhbhaan" to her credit. She received the fellowship of IPA and FIP in the past in recognition of her services to the pharmacy profession.

The previous Ishidate award recipients from India were former IPA presidents, Dr B. Suresh for Pharmacy Education and Mr Subodh Priolkar for Industrial Pharmacy. Thus Mrs Manjiri is the third pharmacy professional from India and first woman pharmacy professional to receive this honors.

Background of FAPA and Ishidate Awards:

Federation of Asian Pharmaceutical Association (FAPA) is established in 1964 and is a federation of national pharmacy associations of countries from Asia and Western Pacific region. We are family, we are one is the slogan of FAPA. FAPA works through its various sections to bring in improvement in the pharmacy profession and education and some of its focus areas are Good Pharmacy Practices, NCDs, Antimicrobial resistance. FAPA has its Congress every 2 years.

Ishidate Awards were initiated by FAPA in 1986 in recognition of the excellent contributions made by Asian Pharmacists distinguished in the field of 1) Hospital Pharmacy, 2) Pharmaceutical Research, 3) Industrial Pharmacy, 4) Pharmacy Education and 5) Community Pharmacy. The Awards are given every two years at the biennial FAPA Congress and are also meant to instil commitment and pride for the pharmacy profession in Asia.

More information about FAPA and various awards can be found at www.fapa.asia.

- **DPSRU faculty awarded to "Youth Education Icon of the Year 2018"**



ICIPMBS-2018, 2nd International Conference on Innovation in Pharmaceutical, Medical and Bio-Sciences- 2018 and Pharmacovigilance workshop in association with PVPI, Indian Pharmacopoeial Commission, IPC, Ghaziabad, organized on 29th and 30th September 2018 by Oriental University, Indore,

M.P. Pharmacists from many states of India as well as outside India came and delivered their expert talk. Approximately 300 scientific papers were presented in form of oral and poster form. Dr. Madhu Gupta, OSD to Vice Chancellor, DPSRU was invited as keynote speaker to deliver expert talk and she was also honored as a judge of the scientific oral paper presentation. Dr. Gupta also awarded Youth Education Icon of the Year 2018" by Hon'ble Prof. Shailendra Saraf, Vice President Pharmacy Council of India and Vice Chancellor, Durg University and Dr. Shashikala Puhpa, Member of Parliament, Rajya Sabha.

- **DPSRU Officer conferred prestigious Grace India Awards 2018**



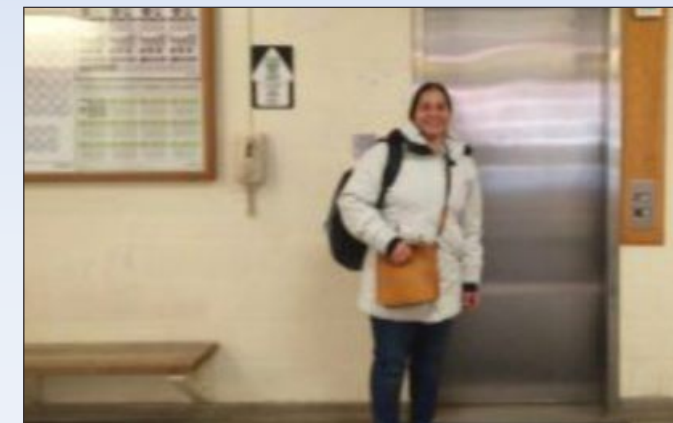
In order to honour distinguished personality who has done significant work in the field of administrative and health areas, Grace India Educational Charitable Trust with Bharat Ratna Dr. APJ Abdul Kalam Memorial Grace India, announced the award winners at Hansraj College Delhi University on 27th Oct.2018. Dr. Madhu

Gupta, Officer on Special Duty to Vice Chancellor, DPSRU was conferred upon with "Best Administrative Service Award 2018" for her outstanding contribution in administrative field.

GRACE INDIA Educational Charitable Trust honors various eminent personalities in the field of health science and administrative field. It is worth mentioning that Dr. Madhu Gupta has been awarded with this invaluable honour. She is actively involved with various things in administrative as well as research field like associate Editor in APTI Women Forum News Letter, advisor in the SinoVeda, Warriors Marketing & Distribution Ltd. as well as interacted with governmental agencies to bring out several Healthcare sector issues of Industry and Academia. She is highly proficient that reflect her organizations, deeply committed to service.

- **Dr. Tabassum Khan was awarded the prestigious Shastri Indo- Canadian Institute, Shastri Mobility Programme (SMP)**

Dr. Tabassum Khan, Professor- Department of Pharmaceutical Chemistry & Quality Assurance, was awarded the prestigious Shastri Indo- Canadian Institute, Shastri Mobility Programme (SMP) fellowship for the



year 2017-18. This is a National level award and she is one of the eight awardees in the country. This award is for a period of 3 weeks to learn advanced pedagogy and work on a short term project in Medicinal Chemistry and novel drug delivery approaches to combat biofilms and cancer at Laurentian University, Canada. She visited Dr. Abdelwahab Omri's lab at Laurentian University and Dr. Afsaneh Lavasanifer's lab at University of Alberta on a five weeks experiential learning program in Oct-Nov 2018. Her fellowship was focussed towards advanced pedagogy and research programs at both the Universities This programme was supported by Ministry of Human Resource and Development, Government of India.

Ph.D Awardees



Mrs. Sumathi K., Associate Professor, Department of Pharmaceutical Chemistry, JKKMMRF's Annai Jkk Sampoorani Ammal College of Pharmacy, Komarapalayam, Namakkal Dt, Tamil nadu has been awarded with Doctor of Philosophy (Ph.D) by The Tamil Nadu Dr. M.G.R. Medical University, Chennai for her work entitled **Phytochemical and Pharmacological Investigations of Carissa carandas. L and Carissa spinarum. L for anticancer activity** and the work was carried out at JKKMMRF's Annai JKK Sampoorani Ammal College of Pharmacy, Komarapalayam under the guidance of Prof. Dr. N Senthilkumar. Principal, JKKMMRF Annai JKK Sampoorani Ammal College of Pharmacy, Komarapalayam. She is having 12 years of research and teaching experience. She has published many research papers in International and National Journals for her credit. She is life member of APTI. She sincerely acknowledges her guide, Management, teaching and non-teaching faculty of JKKMMRF Annai JKK Sampoorani Ammal College of Pharmacy, for their encouragement and co-operation during course of research work.

Women Achievers-2018

A tough fight to rise above all odds and making one's mark sounds heroic. At an age when most headlines are about atrocities against women, there's a handful of **inspiring women** who fight against all odds to achieve their goals.

This **women's day**, we've chosen five women from various walks of life, who've striven hard and become the epitomes of success in their respective field.



Avani Chaturvedi

Avani Chaturvedi is the **first Indian woman pilot** to fly a fighter jet. In a predominantly male workforce, Avani is a true inspiration for women in India who aspire to join defense services. Combat roles in Indian armed forces is still off-limits for women, but Avani has broken all the shackles to 'touch the sky', quite literally!



Arundhati Bhattacharya

Arundhati Bhattacharya is the Chief Managing Director of the State Bank of India. She has made it to **Forbes list of 25 most powerful women**. On the eve of **women's day** in 2017, she decided to introduce free vaccination against cervical cancer for all the female employees of SBI.



Deepika Padukone

Deepika Padukone is one of the top ten highest paid actresses in the world. Apart from delivering superlative performances and making headlines for her **fashion styles**, she has been in the news for being vocal about issues that very few mainstream actresses would do, like depression, equal pay and feminism.



Meenakshi Gurukkal

Meenakshi Gurukkal is the **oldest woman practitioner and teacher** of Kalaripayattu, an ancient martial art form of Kerala. At the age of 76, her agile moves with the sword are powerful enough to give youngsters a run for their money. She is running a school to pass this priceless art form to the younger generation. Fitness freaks, take note!



Indra Nooyi

Indra Nooyi is the Chairperson and CEO of the world's second largest food and beverage company, **Pepsico**. Forbes has positioned her at the 13th rank among the **most powerful women** in the world. She is one of the highest paid CEOs in India, and has often spoken about women's issues, equality and maintaining work-life balance.

List of Commonwealth 2018, Women Medalist

Gold Medalist

- **Saina Nehwal** clinched women's singles gold in badminton.
- **Manika Batra** wins gold in table tennis women's singles, becoming the first Indian woman to do so.
- **Vinesh Phogat** wins gold in women's wrestling freestyle 50 kg Nordic event.
- **M.C. Mary Kom** won 45-48 kg category boxing event, claiming gold in her debut Commonwealth Games.
- **Tejaswini Sawant** won the 50m rifle position event.
- In the **double trap women shooting**, **India's Shreyasi Singh** won gold.
- Shooter **Heena Sidhu** won gold in 25m pistol event to give India its 11th gold medal in the Games.
- The Satwik Rankireddy and **Ashwini Ponnappa Indian mixed team** badminton claimed gold for the first time in the Games' history.
- In the **women's table tennis event**, the Indian team won its first ever Commonwealth gold medal.
- In 10m women's air pistol, **Manu Bhaker** won gold and added sixth gold for India at the Gold Coast 2018 Commonwealth Games.
- Weightlifter **Punam Yadav** became the third woman to win gold for India, coming out on top in the women's 69 kg category at the CWG 2018.
- Weightlifter **Sanjita Chanu** landed India its second gold medal, winning the top spot in the women's 53kg category.
- Weightlifter **Mirabai Chanu** was the first gold medal winner for India, on the opening day, in the women's 48 kg category.

Silver Medalist

- **P.V. Sindhu** picked up the women's singles silver medal in badminton playing against Saina Nehwal.
- **Dipika Pallikal Karthik and Joshna Chinappa** settle for silver in women's doubles squash.

- In mixed doubles squash, **Dipika Pallikal** and Saurav Ghosal claim silver.
- **Manika Batra and Mouma Das** fought hard before going down against defending champions Feng Tianwei and Yu Mengyu to settle for a silver medal in the women's doubles, a first ever for India in the Commonwealth Games.
- **Anjum Moudgil** bagged silver in the women's 50m rifle 3 positions event.
- Wrestler **Pooja Dhanda** made a late push in the women's 57kg final bout to win silver.
- **Seema Punia** came up with a best effort of 60.41m in the women's discus throw, which she did in her opening attempt to win her fourth successive CWG medal.
- **Mehuli Ghosh** won silver in the 10m women's air rifle event.
- In 10m women's air pistol, **Heena Sidhu** won the silver and added second silver for India at the Gold Coast 2018 Commonwealth Games.
- **Tejaswini Sawant** won a silver medal in 50m prone finals in shooting.
- **Wrestler Babita Kumari** won silver in 53kg event.

Bronze Medalist

- **Manika Batra** and G. Sathiyam claimed mixed doubles bronze in table tennis.
- **Ashwini Ponnappa and Sikki Reddy** win bronze at women's doubles badminton.
- In wrestling, **Sakshi Malik** claimed bronze in the Women's Freestyle 62 kg.
- **Divya Kakran** won bronze medal in the women's freestyle 68 kg by outplaying Bangladesh's Sherin Sultana 4-0.
- In the women's discus throw, **Navjeet Dhillon** grabbed the bronze with her final throw of 57.43m
- In women's freestyle 76kg wrestling event, **Kiran** bagged a bronze medal.
- India's **Apurvi Chandela** won bronze in the 10m women's air rifle event.

ANNOUNCEMENT



Practical Pharmaceutical Analysis
Semester I

Authors
Dr. Arti R. Thakkar
Mr. Nitin Sharma

About the Book

This book is written for the purpose of easy and better understanding of the course curriculum of Pharmaceutical Analysis experiments according to the need of Bachelor in Pharmacy (B. Pharm.) students. The content and all the experiments are based on the new syllabus of B. Pharmacy by Pharmacy Council of India. The book content has been framed with specific details about each experiment with required theory, procedure, materials and calculations. Most of the time students are not aware how to perform the calculations for the given experiments. In the present book all calculations and equations are explained in elaborated manner. This approach will help students in thorough understanding about the subject and practical approach which is required for the purpose of better skilling for their future placement purpose. Pharmaceutical Analysis is the subject which is applicable for the analysis of pharmaceutical products in Pharmaceutical Industry. The basic concepts of the subject are required to understand the working of Quality Control (QC) section of Pharmaceutical Industry. It emphasizes on skill development aspects of the QC Chemist job role. Moreover, the content of the book will help not only students but teachers and QC chemists.

Main features of the book are:

1. Brief outline of the subject matter
2. Each experiment with detailed theory/principle, requirements, procedures, equations and calculations
3. Lucid and simple Language
4. Crisp and easy to remember concepts of the experiments
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M.R.P. 295/- Pages 110
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About the Authors

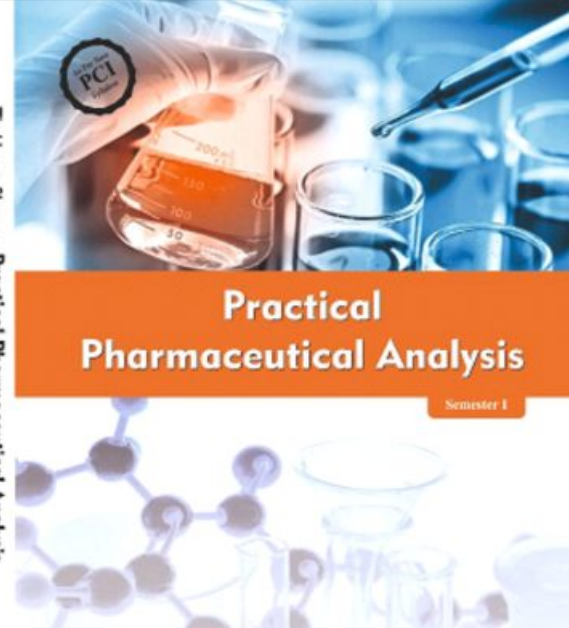
Dr. Arti R. Thakkar is an Assistant Professor in the Department of Pharmacy, The M. S. University of Baroda, India. She was a visiting scholar at King College of Health Sciences, UK (July 2015) and post-doctoral fellow at USC, Schuster School of Pharmacy, University of North Carolina at Chapel Hill, USA. Dr. Thakkar has more than 13 years of National & International (India, UK, USA) experience in the Pharmaceuticals (MNCs, CRO and ODM). She has been in career as a QC Chemist at various Pharmaceutical (MNC) Brands. She has worked as faculty in two academic organizations: Post-graduate, Baroda College of Pharmacy, Baroda University and Baroda Pharmaceutical Sci. and Research University (BPSRU), New Baroda. At present she is Associate Professor, Arts & Science Building, She has developed and established a government approved communication drug testing laboratory named as DR Analytical Laboratory (DRAL), Moga. Dr. Thakkar has 37 publications in peer reviewed journals, 52 presentation in conferences, 3 Indian patents and 1 International book chapter. She received 3 national awards, 10 state awards & 10 international awards for her work. She has guided more than 300 B.Pharm students, Pharm. Analyst, DRAL & Pharmaceutics (including 2 Ph.D. students).

Mr. Nitin Sharma has done his B.Pharmacy from H.N. College of Pharmacy, Vadodra, B. Pharmacy from Department of Pharmaceutical Science, Maharaja Sayajirao University, Baroda & M. Pharmacy (Practical Analysis) from Baroda College of Pharmacy, Moga. He is currently working as an Assistant Professor in the Department of Pharmacy, Baroda University. Mr. Nitin Sharma is an Assistant Professor with more than 7 years of experience in teaching and 3 year experience in working. Mr. Sharma has started his academic career with IIT College of Pharmacy, Moga as Assistant Professor in 2013. He has been given additional duty as an analyst in drug, reported at drug testing laboratory set up at Analytical Laboratory (DRAL), Moga. He worked with Dr. Thakkar at King's College of Health Sciences, UK and Baroda University, Baroda in 2014. Presently he is working as an Assistant Professor at Baroda University of Health Sciences & Technology from 2015. Mr. Sharma has 08 publications in peer reviewed journals and one book chapter. He has guided more than 10 M. Pharmacy students for their dissertation work.




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Semester I



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RESEARCH GRANTS

SERB Research Scientists Scheme (SRS):

SERB has recently modified the guidelines of the SRS scheme. The following guidelines come into effect immediately. 1. The SRS scheme can be availed only once by a candidate in his/her career and is tenable for a period of 2 years, extendable to one more year, subject to performance evaluation. Under any circumstances, the support is not extendable beyond three years. 2. The SRSs will be entitled to receive the grants as given below. Sl. No. Budget Head Amount 1 Emolument Consolidated amount* of Rs. 1,20,000/- per month 2 Research Grant Rs. 7,00,000/- per annum 3 Overheads Rs. 1,00,000/- per annum * All-inclusive 3. SERB-DST has no objection if the host institute so decides to extend the same terms and conditions to SRS, as normally available to Ramanujan / INSPIRE Faculty awardees. 4. Once an application is considered and found unsuitable under SRS scheme, application for 2nd time will not be entertained. 5. Implementation of the above revised norms starts from the first cohorts of SRS. 6. Other conditions remain the same as given earlier.

INDUSTRY RELEVANT R&D

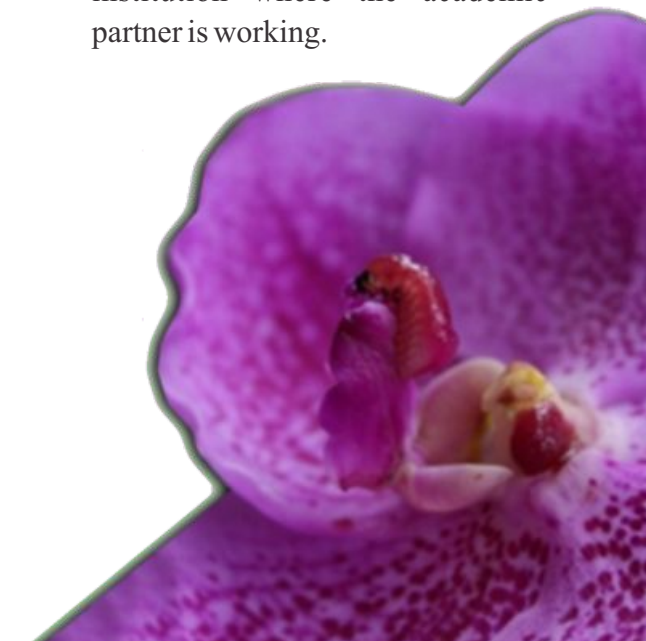
The scheme is aimed at supporting ideas that address a well-defined problem of industrial relevance. The proposal, therefore, shall be jointly designed and implemented by the academic partner (which includes a partner from national laboratories/ recognized R&D institutions as the case may be) and industry. The participating industry should ensure that the objectives are industrially relevant. Routine proposals that address conventional problems and those not related to industry, or with already established approaches are not encouraged. SERB will not list out the industry relevant problems, and it will be the responsibility of the investigator and the industry to join together and come up with a proposal to solve the identified problem. Ideally, the proposal

must contain the characteristics of any of the following:

- Proposals that adopt an innovative approach to solve a problem faced by the industry.
- Proposals whose outcomes will bring new scientific and technological innovations.
- Solution driven research that aid technology transfer and commercialization.

The funding shall be shared between SERB and Industry. The industry share should not be less than 50 % of the total budget. Overhead is provided to the academic partner. The SERB share shall not exceed Rs. 50 lakh for a project. The upper cap may be relaxed on case to case basis.

- The funding can be provided for a maximum period of three years.
- The support from SERB shall be extended only to the the academic partner and not to the industry. The research grant will be provided for equipment, manpower, consumables, travel, pilot plant study, and any other costs associated with the project. It is expected that the equipment will be installed in the institution where the academic partner is working.



LOTUS BACKGROUND STORY

As a lotus is able to emerge from muddy waters un-spoilt and pure it is considered to represent a wise and spiritually enlightened quality in a person; it is representative of woman who carries out their tasks with little concern for any reward and with a full liberation from attachment. Lotus-woman in the moern sense of women's qualities: she is superbly intelligent, highly educated, and totally committed to individualism. She is politically astute and works incessantly for a better and more humane society. She is exquisite in her taste for music, art and culture, abounds in social graces and performs brilliantly in communication.

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ANY CONTRIBUTIONS IN THE FORUM OF ARTICLES, WOMEN ACHIEVEMENTS, INDUSTRY UPDATES OR
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2019 01
January

S	M	T	W	T	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

2019 02
February

S	M	T	W	T	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	1	2

2019 03
March

S	M	T	W	T	F	S
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

2019 04
April

S	M	T	W	T	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

2019 05
May

S	M	T	W	T	F	S
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

2019 06
June

S	M	T	W	T	F	S
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

2019 07
July

S	M	T	W	T	F	S
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

2019 08
August

S	M	T	W	T	F	S
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

2019 09
September

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

2019 10
October

S	M	T	W	T	F	S
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

2019 11
November

S	M	T	W	T	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

2019 12
December

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4