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# **DEVAKI AMMA MEMORIAL COLLEGE OF PHARMACY**

(Affiliated to Kerala University of Health Sciences, Thrissur and Approved by AICTE & PCI, New Delhi)
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#### INSTITUTION VISION

To be the ultimate destination for training, practice and research in pharmacy education to cater the health needs of the society.

#### INSTITUTION MISSION

To provide state-of-art infrastructure, research facilities with eminent faculties to disseminate advanced knowledge in pharmacy education through innovative teaching-learning process with human and ethical values.



#### FROM THE EDITOR'S DESK .....

A warm welcome to all the Members and Dear Readers!

"Integrity is doing the right thing, even when no one is watching. While "Wisdom" knows the 'Right Path to Take', "Integrity" is 'Taking' it!!" No other ways can work positively for any rejuvenation or revival if this is not observed, first hand. So as the 'Change' can only be

'Constant' in life, we have to constantly improvise and be adaptive to the latest updates.

With renewed energy, the editorial board and committees is glad in releasing the Department newsletter, "Pharma Monarch", in this academic year. This newsletter will serve and facilitate greater understanding, enhanced communication and integration among all of us. It also covers information on academic activities, research and pharmacy updates, etc.

Research and innovations in teaching that is accommodating to learners is the only way to prevent any monotony in the routine and enjoy what you do for a livelihood. We would like to maintain this level of dedication and consistency for these efforts as it's a reminder and culmination of what is achieved so far and still to be achieved towards our collective goal.

I am pretty sure that this newsletter will offer ample opportunity to the students and faculties. This will help them to bring their talents and contribute significantly to the profession. Today Pharmacy profession is not just confined to industry alone. It has expanded immensely and there are lots of opportunities available in Clinical Research, Nanotechnology, Drug Discovery, Pharmacovigilance, etc.

We have to ensure that our students are ready for them and we have to adapt and embrace the change as the time demands and move on. Whatever knowledge we get, whatever accomplishments made by us, we bring it in front of you and this is amazing experience for every faculties and students and getting a satisfaction that everyone is doing well and grow more interested in our activities.

We extend our sincere thanks to beloved Management, Principal & Vice-Principal, for generous support and grant us permission to release this newsletter, which will serve as a platform for today's Pharmacists to share their knowledge and recent activities. Personally, I would like to thank all our colleagues for their greater contribution to release this edition and hope you sincerely enjoy its contents!

To learn extra and refresh your memory, keep scrolling for insights of happenings and update your knowledge.

All the best for your genuine efforts.

We wish all of you a Happy Onam & Teachers Day - 2023 celebrations, in Advance.....

Have A Great and Happy Reading!

Best Regards, Prof. Dr. R. Nethaji, Editor-in- Chief

IN THIS ISSUE \* Department Activities \* Department Achievements

"Learning is not the Product of Teaching. It's the Product of the Activity of Learners"~ John Holt



In the remembrance of Shri, K.V. Sankaranarayanan (01.01.1948 - 12.07.2013) Founder, Devaki Anna Menorial Institutions

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### DEPARTMENT ACTIVITIES

#### RESEARCH PROJECTS

The Pharmaceutics department have successfully completed the following research projects for PG scholars (2020 Admission) and UG students (2018 Admission) as listed below:

Project Title	Students Name	Guided by
Anti-Hypercholesterolemic Herbal Tablets: Formulation and Characterization using Plant Derived Mucilages	Ms. Aishwarya Jith	Dr. R. Nethaji
Design, Development and Evaluation of Polyherbal Tablets for Uterine Myomas Treatment	Ms. Fathima Thahsin T	Dr. R. Nethaji
Formulation Development and Evaluation of Novel Herbal Medicinal Lozenges: A Systematic Approach for Oral Stomatitis	Mrs. Finu Sherin A.P	Dr. R. Nethaji
Investigation into the Possibility of Drug Delivery via Menstrual Cups and Sanitary Pads	Mrs. Fathima Rabwa P.T	Dr. Vimal K.R
Development of Traditional Wound Healing Potential of Polyherbal Formulation	Ms. Niyuktha S	Dr. R. Nethaji
Development and Characterization of Polyherbal Formulation for the Treatment of Haemorrhoids	Mrs. Swathi H	Dr. Vimal K.R
Investigation and Development of an Organic Herbal Formulation that Aims at Type 2 Diabetes Mellitus	Ms. Anagha H	Dr. Vimal K.R
Development and Evaluation of Effective Topical Formulation for Insect Bite with Anti-Inflammatory, Analgesic, Anti-Histaminic Properties	Ms. Cristy S Joseph	Dr. Vimal K.R
Development and Assessment of Formulations with Natural Pigments for Enrichment and Coloration of Lips	Haseeb. K Maneesha P.N Mohammed Nabil K.P Raheedha Mohammed Veena C	Dr. Vimal K.R
Preparation and Evaluation of Polyherbal Face Wash for Anti-Acne Activity	Ajal P Aseema Thasnim Fahamidha O.C Shibla Yasmin Shemsila Shajahan	Mrs. Mishahal T.M
Development and Characterization of Deodorant and Antiperspirant Cream and Stick of Polyherbs	Afisha Shareen Najisha V.P Shabeeha Mathapulan Aseefa Anusree C.N	Mrs. Neethu K
Development and Characterization of Anti-Acne Cream using Poly Herbal Extract	Mohamed Farsin V Namitha M Thamanna Jaleel Usna Nairoose	Mr. Binulal C
Formulation and Evaluation of Anti-Microbial Poly Herbal Lotion	Amritha Vijayan Fathima Rahna Aswathi T Akhila A.K	Mrs. Jinisha E.K

"Vulnerability is the Birthplace of Innovation, Creativity and Change" ~ Brene Brown



#### RESEARCH PUBLICATIONS

The students and faculties were encouraged to involve in various research activities which are evidenced by their paper publications and communication in reputed international journals and text books as listed below:

#### Mrs. Fathima Rabwa P.T, et al.

Formulation and Evaluation of Vaginal Gel using Spillanthus Ciliata for the Treatment of Menstrual Pain. International Journal of Scientific Development and Research, July 2023; 8(7): 891-903.

Recent Discoveries on Acmella Oleracea; A Review, Journal of Pharmacognosy & Natural Products, February 2023; 9(2): 1-4.

#### Dr. R. Nethaji et al.

Development and Characterization of Cefuroxime Axetil Loaded Nanoparticles. *Indian Journal of Applied Research*, April 2023; 13(4): 33-36.

Antibiotic Emulgel: Design and Characterization for Topical Drug Delivery. Saudi Journal of Medical and Pharmaceutical Sciences, August 2022; 8(8): 381-391.

#### Dr. Zeeshan Afsar, Dr. Nethaji Ramalingam et al.

Antimicrobial Screening and Green Synthesis of Silver Nanoparticles from Lantana Camara Flower Extract. Indian Journal of Applied Research, November 2022; 12(11): 73-75.

#### Mr. KrishnaPrasad K, et al.

Azima Tetracantha Leaf Methanol Extract inhibits Gastric Cancer Cell Proliferation through Induction of Redox Imbalance and Cytochrome C Release. Applied Sciences (Switzerland), January 2022; 1(12): 120.

Chemical Composition of Cinnamomum Verum Leaf and Flower Essential Oils and Analysis of Their Antibacterial, Insecticidal and Larvicidal Properties. *Molecules*, 2021; 2(10): 6303-6306.

#### RESEARCH PRESENTATIONS

Our department faculty and M.Pharm students (2020 Admission) were sponsored to participate as delegates and presented the research finding at various scientific events in order to keep current updates on the recent trends and advancements in the pharmaceutical province. As evidenced, our teams have presented and been awarded in some series:

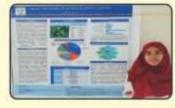
Mrs. Finu Sherin A.P, has delivered the research title on "Formulation Development and Evaluation of Novel Herbal Medicine Lozenges - A Systematic Approach for Oral Stomatitis", in the National Seminar on Effective Teaching, Learning Strategies and Research in Pharmacy, jointly organized by APTI (Tamilnadu State Branch), held on 1<sup>st</sup> April 2023, at PSG College of Pharmacy, Coimbatore, Tamilnadu.



Dr. Nethaji Ramlingam, Professor & Head, presented the research paper entitled "Development and Evaluation of Mucoadhesive Tablet of Esomeprazole", in 6<sup>th</sup> SAS International Conference and Awards 2023 (SICA-2023), held on 5<sup>th</sup> March 2023, at Guwahati, Assam.



Mrs. Fathima Rabwa P.T, has presented the topic on "Recent Discoveries on Acmella Olaracea: A Review", in the International Seminar on Recent Advances in Pharmaceutical Sciences, held on 2<sup>nd</sup> February 2023, at College of Pharmaceutical Sciences, Government Medical College, Kozhikode, Kerala.



"Research is Formalized Curiosity. It is Poking and Prying with a Purpose" ~ Zora Neale Hurston



Mrs. Finu Sherin A.P, has secured Best Paper Presentation Award in the topic entitled "Formulation and Evaluation of Neem Seed Oil Suppositories Adapting Novel Bases", in 4th National Conference on Innovative Research in Life Sciences (NCIRL 22), from 15th-16th September 2022, at Centre for Bioscience and Nanoscience Research (CBNR), Coimbatore, Tamilnadu.



#### SCIENTIFIC EVENTS PARTICIPATION

Our teaching faculties and M. Pharm students (2020 & 2021Admission) were encouraged to participate as delegates at various conferences to update the current trends and developments in the area of their specialization which was evidenced as given below.

Prof. Dr. Nethaji Ramalingam & Dr. Zeeshan Afsar, Professor, Department of Pharmacognosy, has participated the workshop on Social Innovation and Enterpreneurship for Sustainable Development, jointly organized by National Innovation Foundation & National Institute of Technology (NIT), held on 28th March 2023 & 1th April 2023, at NIT, Calicut.



Mr. Adarsh M, Ms. Anju Suresh, Ms. Arathi P, Mrs. Ardra K, Mr. Arjun Anand, Ms. Aswathi P, Ms. Aswini Ullas K, Ms. Jijimol PJ, Mr. Midhun T, Ms. Nadira K, Ms. Shabarin Jouhara & Mrs. Aysha Afeefa A (I" Semester M.Pharm), has participated as delegates in "1" Kerala Pharmaceutical Congress (KPC 2023), organized by Kerala Pharmacy Graduates Association (KPGA), at St. James College of Pharmaceutical Sciences, Chalakudy, from 25" to 26" February 2023.



Mrs. Mishahal T.M, Asst. Professor, Mrs. Neethu K, Asst. Professor, Ms. Aishwarya Jith, Ms. Fathima Thahsin T, Mrs. Finu Sherin AP, Mrs. Fathima Rabwa P.T, Mrs. Swathi H, Ms. Anagha A, Ms. Niyuktha S & Ms. Cristy S Joseph (4<sup>th</sup> Semester M.Pharm), has participated in "Recent Advances in Pharmaceutical Sciences", a One Day International Seminar, held on 2<sup>th</sup> February 2023, at College of Pharmaceutical Sciences, Govt. Medical College, Kozhikode.



Mr. Adarsh M, Ms. Anju Suresh, Ms. Arathi P, Mrs. Ardra K, Mr. Arjun Anand, Ms. Aswathi P, Ms. Aswini Ullas K, Ms. Jijimol PJ, Mr. Midhun T, Ms. Nadira K, Ms. Shabarin Jouhara & Mrs. Aysha Afeefa A, has attended the CME conference on "Current Trends in Clinical Pharmacy and Therapeutics", held on 9th December 2022, at Abirami College of Pharmacy, Coimbatore.

Mrs. Swathi H, Ms. Anagha A & Ms. Niyuktha S, has participated as delegates in the National Seminar on "Advances in Health Care Research and Career Opportunities", conducted on 3<sup>rd</sup> December 2022, in association with APTI - Kerala State Branch, at Crescent College of Pharmaceutical Sciences, Kannur.

Ms. Aishwarya Jith & Ms. Fathima Thahsin T, participated in IP Awareness/Training Program under National Intellectual Property Awareness Mission (NIPAM), organized by Intellectual Property Office, India, on 30th November 2022 (Online).

Ms. Anju Suresh, Ms. Arathi P, Mrs. Ardra K, Ms. Aswathi P, Ms. Aswini Ullas K, Ms. Jijimol PJ, Ms. Nadira K & Ms. Shabarin Jouhara, has participated in the National Seminar organized by the Indian Pharmaceutical Association (IPA), Kerala State Branch, at JDT Islam College of Pharmacy, Kozhikode, on 22<sup>rd</sup> November 2022.



Mrs. Swathi H, attended National Seminar on "Fundamentals of Pharmacovigilance and Chiral Drug Discovery (MASCON-2022)" jointly organized with APTI - Kerala State Branch, held on 21<sup>st</sup> November 2022, organized by Malik Deenar College of Pharmacy, Kasargod.

Books Become Permanent Companions. Sometimes, They Are Born Before us;
They Guide us During Our Life Journey & Continue For Many Generations ~ Dr. A.P.J. Abdul Kalam



Dr. Vimal K.R, Associate Professor & Ms. Cristy S Joseph, has participated in "Recent Trends in Clinical Trial Indian & Global Perspectives, on 22<sup>nd</sup> October 2022, organized by Department of Pharmacology, MES Medical College, Perinthalmanna, Malappuram.



Ms. Aishwarya Jith, Ms. Fathima Thahsin T, Mrs. Finu Sherin AP, Mrs. Fathima Rabwa PT, Mrs. Swathi H, Ms. Anagha A, Ms. Niyuktha S & Ms. Cristy S Joseph, has participated in the National Seminar on "Upgrading Horizons and Modern Insight in Pharmacy", organized by Prime College of Pharmacy, Palakkad, in association with Indian Pharmacy Graduates Association (Kerala State Branch), on 20° August 2022.



#### NATIONAL SEMINAR







Inauguration Ceremony

Inaugural Address

Textbooks Launch by Eminent Guests

The Department of Pharmaceutics proudly organized a One Day National Seminar on "Latest Innovations in Pharmaceutical Sciences-(LIPS 2023)", on 7th January 2023.

The program was commenced with inaugural function, presided by Shri Mr. M. Narayanan, Trustee & Manager, Devaki Amma Memorial Institutions by Lighting the Lamp and followed by the welcome address delivered by Dr. G. Babu, Principal.

The program was inaugurated by the Chief guest Mr. Damodar Avanoor, Director, Chethana Pharmaceuticals, Perintalmanna, Malappuram, Kerala. Dr. V. Sankar, Vice-Principal & Professor, PSG College of Pharmacy, Coimbatore & President of APTI, Tamil Nadu Branch, was the Guest of Honor for the inaugural ceremony. The speakers Dr. Muthukumar A, Manager, Medreich Limited, Bengaluru, Karnataka, and Mr. Sivaganesan K, Manager, Biocon Biologics Ltd, Bengaluru, Karnataka, was also invited as the eminent guests. Dr. Biju C.R., Vice-Principal & Professor, has felicitated the said function.

During the inaugural session, the "Textbook of Pharmaceutical Biotechnology" authored by Dr. Zeeshan Afsar, Dr. R. Nethaji, Dr. S. Sudha, Dr. Vimal K.R., and the "Textbook of Modern Concepts in Pharmacy Law and Ethics "authored by Dr. Zeeshan Afsar and Dr. Vimal K.R., were also released by the eminent guests.

Dr. V. Sankar, delivered the first session of the topic entitled "Nano Medicine in Cancer Therapy", followed by Dr. Muthukumar A, on the topic on "Developments in Pharma Sector: Opportunities and Expectations", and Mr. Sivaganesan K, was presented on "Role of Novel Biological Products in Health Care". All the scientific sessions were very informative and innovative.

Overall 275 delegates have participated with 75 e-poster presentations. All the e-posters are reviewed and scored by reviewers and the best e-poster awards are presented during the valedictory function. Finally, the programme was concluded with the vote of thanks.

"Any Form of a Winning Record in the Conference is an Accomplishment" ~ Jordan Knight



#### DEPARTMENT ACHIEVEMENTS

#### ENTREPRENEURSHIPCELL

**Dr. Vimal, K.R,** Associate Professor, was invited as the esteemed Guest of Honor for launching the entrepreneurship event (PSG CP Business Club) at PSG College of Pharmacy, Coimbatore, Tamilnadu, on 10<sup>th</sup> March 2023. The aim of this business club was fostering entrepreneurship activities among the students. During this momentous occasion, he undoubtedly inspired and motivated the student's community as they embark on their entrepreneurial journey. Our sincere gratitude is extended to Dr. Vimal K.R., Associate Professor, for his quest to make this event as a resounding success.

Business Club Launching Ceremony



Best Academician Awards

#### HONOUR & AWARDS

Prof. Dr. Nethaji Ramalingam, have received "SAS Best Academician Awards" (Pharmaceutical Sciences), held on 5<sup>th</sup> March 2023, conducted by Scholars Academic and Scientific Society, Assam, in recognition of his achievements and commitment to professional advancement. He has SAS Eminent Fellow Membership (SEFM) by the Executive Committee of Scholars Academic and Scientific Society in recognition for an outstanding contribution in Education and Research with effect from April 2021.

#### PATENT RECEIVED

Prof. Dr. Sudha Subramanyam et.al, have filed a design patent on "Microreactor for Nanoparticle Synthesis" with Design Application No. 380787-001 dated 03.03.2023 (Link; https://search.ipindia.gov.in/DesignApplicationStatus). Receiving this patent is not only a personal milestone but it's truly a remarkable achievement and a valuable contribution to the institution. Our organisation congratulates Dr. Sudha Subramanyam, for realize this noteworthy goal

#### RESEARCH COLLOBORATION

Devaki Amma Memorial College of Pharmacy, signed a Memorandum of Understanding (MOU) with RTN PHARMA, Hosur, on 2<sup>nd</sup> May 2023. The main objective of this undertaking to establish Industry-Institute interface, preserving a long standing relationship and encouraging the students through research projects, training, interaction and faculty exchange. The college also has agreed to invite them as delegates for the forthcoming industrial training sessions.

The research collaboration (MOU) was also signed with MVR Ayurveda Medical College, Parassinikkadavu, Kannur, on 16<sup>th</sup> January 2023 and an agreement was aimed to foster synergy between the fields of Pharmacy and Ayurveda Medicines. This collaboration seeks to facilitate joint research projects, knowledge exchange and development of innovative healthcare solutions. By leveraging the expertise and resources of both institutions, this partnership holds great promise for advancing scientific research and promoting holistic healthcare practices in the region and beyond. This is another significant accomplishment made by **Dr.Vimal K.R**, for establishing this research partnership.



Memorandum of Understanding

"Innovation is the Specific Instrument of Entrepreneurship.....

The Act That Endows Resources with a New Capacity to Create Wealth" ~ Peter Drucker



#### TEXT BOOK PUBLICATIONS

The following textbooks were written and published by the teaching faculties. Our institution congratules everyone, on attaining this significant milestone accomplishment.

Dr. Zeeshan Afsar, Mrs. Sneha Prakash, V, Mrs. Shantiya K, Mrs. Binulal C. A Text Book of Fundamental of Research Methodology & Biostatistics (For 8th Semester B. Pharm & 4th Pharm. D., as per new PCI Regulation), (Publisher: S. VIKAS & COMPANY, Jalandhar, Punjab, 2023) (ISBN: 97815-43347-36-4).

Dr. Zeeshan Afsar, Dr. Nethaji Ramalingam, Dr. Sudha S, Dr. Vimal K.R. A Text Book of Pharmaceutical Biotechnology (For 6<sup>a</sup> Semester B. Pharm., as per PCI Regulation), (Publisher: MAHI Publication, Ahmedabad, 2022, 1-133) (ISBN: 978-93-95581-25-7).

#### SCIENTIFIC PUBLICATION STATISTICS

Manuscript publications in peer-reviewed journals serve as an indicator of the department's scientific productivity, influence & contribution to the field of pharmacy.

The scientific publication statistics play a crucial role in assessing the research focus, research output and improve an academic performance. Furthermore, analyzing publication statistics provides valuable insights that aid in improving the research quality and collaboration opportunities.

The Pharmaceutics department is pleased to announce that, totally 54 scientific research publications were done by the faculty members and students, as stated in year wise and journal wise

"Publication has been Extended far Beyond our Present Ability to make Real use of the Record"

~Vannevar Bush

Year wise	Journal wise		Barton da and da
	International	National	Published Articles
2023	03		03 (Till Date)
2022	04		04
2021	14	-	14
2020	05	т.	05
2019	02	0	02
2018	01	+	01
2017	05		05
2016	03		03
2015	05	01	06
2014	01	02	03
2013	02		02
2012	-	01	01
2011	03	02	05
Total	48	06	54

\*M.Pharm Pharmaceutics was established in the year 2011

#### EDITORIAL BOARDS MEMBERSHIP

Prof. Dr. Nethaji Ramalingam, has been appointed recently as an Editorial Board Member for the following prestigious International Journals:

- Research of Gastric Management and Hepatology (Medires Publishing LLC, USA).
- International Journal of Life Science Research Archive (Scientific Research Archives, Jamaica).
- International Journal of Science and Technology Research Archive (Scientific Research Archives, Jamaica).
- International Journal of Science and Research Archive (Magna Scientia, India).

#### INDUSTRIAL VISIT

A regular training programme for the students in pharmaceutical industry is arranged as a part of curriculum industry interaction.

One day industrial visit was organized for the M.Pharm students (2021 Admission) on 09<sup>th</sup> February 2023. Mr. Adarsh M, Ms. Anju Suresh, Ms. Arathi P, Mrs. Ardra K, Mr. Arjun Anand, Ms. Aswathi P, Ms. Aswini Ullas K, Ms. Jijimol PJ, Mr. Midhun T, Ms. Nadira K, Ms. Shabarin Jouhara & Mrs. Aysha Afeefa A, was visited to Sangrose Laboratories Pvt Ltd, Mavelikara, Alappuzha.

An industrial visit has also been arranged for First year D. Pharm students (Batch 2021) to Chethana Pharmaceuticals, Perinthalmanna, Malappuram, on 13<sup>th</sup> January 2023.

Overall both trips was incredibly a learning and fruitful experience for our students in terms of future jobs employment and acquiring an awareness of the actual guidelines linked to production and allied units in the Pharma industry, also it gave them more exposure.

"It is Easy to Get a Thousand Prescriptions, But Hard to Get One Single Remedy" ~ Chinese Proverb





M.Pharm Students Sangrose Laboratories Pvt Ltd, Mavelikara



D. Pharm Students Chethana Pharmaceuticals, Perinthalmanna

#### FAREWELLPARTY

M.Pharm students (2020 Admission) have successfully completed the End semester examination on 16<sup>th</sup> June 2023 and a farewell party was arranged on the same day by the junior students. Department faculty members was also attended the farewell event and wished them the best of luck for all their future endeavors. All the juniors have expressed their gratitude to the seniors for his/her leadership and direction over the years.



Happy Moments



Farewell Session

#### NEW FACE

The Department of Pharmaceutics is happy to welcome new faculty members to our group. Mr. Binulal, C, has joined as Assistant Professor on 13th February 2023. He was awarded B.Pharm from College of Pharmaceutical Sciences, Government Medical College, Kottayam and M.Pharm (Pharmaceutics) from Devaki Amma Memorial College of Pharmacy, Malappuram. His scientific interests include the development of nanoparticles, mucoadhesive microspheres and phytochemical screening.



Mrs. Jinisha, EK, has joined as Assistant Professor from 13<sup>th</sup> February 2023. She earned her B.Pharm and M. Pharm (Pharmaceutics) from Crescent College of Pharmaceutical Sciences, Kannur. Fast Dissolving Tablets, Microspheres Formulation and Therapeutic Bioengineering are among her area of interests.



Appointed faculty will teach in the Pharmaceutics sequence and devote their career towards continuing their excellence in service. Welcome Mr. Binulal, C & Mrs. Jinisha, EK, to our wing.

#### FACULTY CORNER

#### A FOCUS ON NEW TRENDS IN THE PHARMA INDUSTRIAL SECTOR

(Source: https://www.amrop.com/media/kj/pvkpo/pharma-india-2030-trends-and-talent.pdf)

Mr. KrishnaPrasad K, Asst. Professor

The pandemic diseases has had severe repercussions on economies and industries around the world. The pharmaceutical business, however, has experienced a spike in growth in the midst of the crisis. The pandemic's challenges opened up new possibilities, particularly for the pharmaceutical industry, which is currently dealing with the pandemic's effects and adapting to new conditions. Here's a look at the current trends that will play a major role in reshaping the future of the pharma industry.





#### A) Changing Government and Regulatory Landscape

Healthcare - Centre of the Government Agenda

Healthcare is an increasingly important policy agenda item for the government, with a significant increase in healthcare budgets. Going forward, working effectively with the government will shape the future of the sector. The industry needs to display greater consciousness of the needs of the government and society than before. Companies will be required to focus on evolving Public Private Partnerships (PPP) models to participate in more government and public driven healthcare programs.

Greater Vigilance from Regulators

With increased vigilance from regulators, a focus on quality assurance and control has become even more critical, especially for players catering to developed markets. One of the key challenges facing the pharma industry is compliance. For sustainable growth, companies need to work in a more compliant and ethical way, with greater transparency in operations and customer interactions.

Tightening of Policy and Faster Regulatory Approvals

Market competition is intensifying due to faster regulatory approvals. This requires companies to be right 'first time' and build deeper capabilities around understanding of sciences in house. Moreover, with the tightening of policy, the cost of failing is very high and companies need to focus on risk management.

#### B) Digital Disruption

New Digital Players Disrupting the Industry

Technology and Digital have formed a disruptive force in the pharma sector, affecting the way healthcare is delivered and how patients interact with players. With the influx of new digital start-ups, existing relationship are being redefined as new partnerships are being built. There is a diminishing role for traditional intermediaries as digital apps allow direct access and engagement with patients. These disruptions offer an opportunity for collaboration between pharma and digital players. New entrants such as Practo, NetMeds and Img are already focusing on building new partnerships and converging healthcare/pharma and digital ecosystems. This trend will accelerate in coming years.

Digital will be the Backbone of Transformation

Historically, Pharma has been something of a laggard in the digital space compared to other sectors such as fast moving consumer goods (FMCG). However, the rate of adoption will pick up speed going forward. Digitization will be instrumental in reshaping the sector and in integrating the ecosystem. Consequently, the pace of change of the industry will be dramatically different. To remain competitive, companies will need to demonstrate agility in responding to changes and invest in building new age capabilities. Some players have already started taking steps in this direction.

Leveraging Data & Analytics to Build Competitive Advantage

Industry players will need to focus on developing new products and solutions by integrating science and innovation with data insights. Analytics will thus play an important role in driving efficiencies and productivity. Investing in advanced analytics capabilities will be essential in ensuring successful outcomes.

#### C) Shifting Industry Dynamics

Shift from "Make in India" to "Develop in India"

The industry's focus is shifting from "Make in India" to "Develop in India". Going forward, New Product Development and Innovation capabilities will be crucial for driving growth. Pharma companies need to cater to the needs of Indian disease profiles and focus on the discovery of new treatment options, since research in some of these areas has not so far attracted proportionate attention.

Increasing Wave of Globalization

Globalization has been a key industry trend for the past several years. Ever more global leaders are coming to India - and vice versa. Today, Indian pharma players have a footprint in more than 200 countries, which is expected to increase further. As globalization intensifies, the depth and breadth of market penetration will increase with companies operating on a broader canvas.

#### Rural Markets Gaining Attention

Currently, while around 70% of the Indian population resides in rural areas, the provision of Healthcare services is inversely skewed towards urban areas - at around 70%. Moving forward, both rural and urban markets will become important and Pharma companies will need to focus on the development of channel infrastructure to reach smaller cities and rural markets.

#### Changing Mind-set - Collaborative vs Competitive

The industry is witnessing the harmonization and merging of sectors, especially Pharmaceuticals, Medical Devices and Disposables. Going forward, players will need a more collaborative and adaptive approach. Connectivity with the wider ecosystem across the value chain, such as with hospitals and distributors will be critical for growth and success.

#### Shift in Focus - From Pricing to Value Addition

Pricing sensitivity is a key point of convergence between domestic and global markets. Value for money is increasingly critical. In order to maintain a competitive edge, companies need to focus more on 'value generation' than plain vanilla pricing. This will be increasingly driven by health economics models.

#### Greater Focus on Cost Optimization and Cost Management

Industry players will need to operate with a cost-optimization mind-set, with keen management of both manufacturing and sales/marketing spend. There is considerable scope for companies to develop cost transformation initiatives, especially when required to cater to various government schemes such as Ayushman Bharat and Jan Aushadhi Yojana.

#### D) Emergence of New Go-To-Market Models

#### Shift in Decision Making - From Physicians to Pharmacists

Today, traders/pharmacists play a greater role in influencing purchasing decisions as compared to the once-predominant role of physicians. Consequently, Medical Representative (MR)-based distribution models are getting disrupted. Players are re-evaluating traditional MR models and their impact on current systems and processes. The traditional role of an MR as the communicator of marketing content is also losing relevance and the expectations from the role have changed considerably. Today, an MR is expected to possess skills across Sales, Medical Knowledge and Relationship Building. However, it is becoming difficult to find talented professionals that singly master all of these.

#### Empowered Patients Driving Consumerization

The industry is becoming more consumer-driven. Patients and family members are more empowered and better informed. They ask a lot of questions of physicians, retailers and pharmaceutical organizations. In response, pharmaceutical organizations are evolving along the lines of FMCG/Consumer organizations, wherein managing multiple channels and consumers is becoming increasingly important. This will be driven by both push and pull strategies. The industry will witness a diversification of portfolio mix with increased focus on the OTC segment. Acquiring capabilities and talent for this segment will be important. We expect a rising import of talent from other sectors, such as FMCG.

#### Evolution of New Channels along with Existing Trade Channels

The historical power of trade channels (especially of the organized bodies) continues, with their increasing role in influencing purchase decisions. However, e-pharmacies have also registered strong growth in recent years. They are becoming an important segment of distribution channels, eroding the relative strength of conventional channels. Players need to build capabilities relevant for both existing channels and evolving newer channels. Managing multiple channels effectively will be vital to stay relevant and ahead of the curve.

### Focus on Innovation Even as Branded Generics Continue to Dominate

India has traditionally been a branded generics market with a large number of established players and high competition intensity. We are seeing an influx of entrants in this segment. Going forward, while the overall focus on branded generics will continue, the model and game will change. Patented products and innovation will play a more prominent role. A more comprehensive and integrated approach will be required to compete in this segment.



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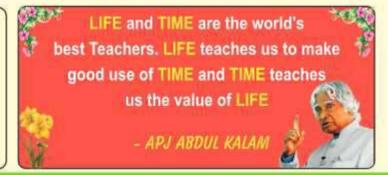
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