

PROBE

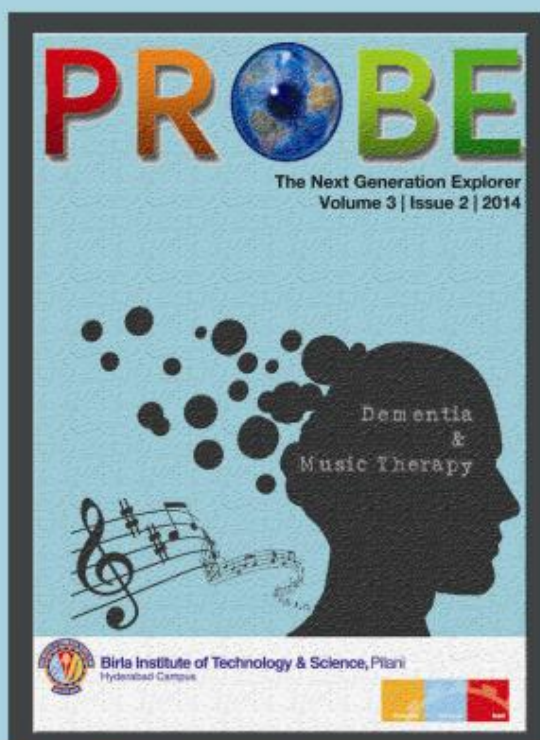
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Hyderabad Campus



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This bimonthly magazine is published by Department of Pharmacy, BITS-Pilani, Hyderabad Campus. The primary aim of this magazine is to highlight recent updates in life-science research, specially in the field of Pharmacy. Also this magazine serves as a common platform to share the ongoing research, achievements, events and future opportunities useful for the young researchers.

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Editorial



My Last Editorial: Was it Worth?

The editor will change, but PROBE won't.

"Change is the law of life. And those who look only to the past or present are certain to miss the future"

-:John F. Kennedy

This issue is my last as editor of PROBE.

The past two years have flown by and I have enjoyed working with all the authors, readers, interviewers, reviewers and cartoonists who I have interfaced with on various issues. I can tell you what it was worth to take on the position of editor of PROBE. As a Ph.D. candidate, being published meant everything to me; and it still does. That was the ultimate honor. For me, being published in PROBE was "cool". When we were thinking about the magazine, we had a meeting in the conference room. When the Editor-in-chief Dr. Sajeli begum asked me if I was interested, I said "Yes", and the rest is history. Though I did not know what I was saying yes to, I knew there was a bigger future for me at PROBE. I started as editor, but soon turned out to writer, typesetter, proofreader, planner, interviewer and photographer.

What is it worth to take on so much responsibility?

I do not know how to define a leader back when I said yes. I saw an opportunity to change things for the better. Surprisingly, being able to administer roles and responsibilities come naturally when I started working, and I started working hard on it. My job was to build the magazine from scratch, to earn respect by bringing 100 times more respect to the magazine we started, and the respect of my department. Being editor of PROBE is a big deal with big responsibilities and yes, this is one of the most important aspects of my life in the department. Success is what it was worth. The success that "Team PROBE" and I have had here is only a small piece of the whole picture. We created a culture, an avenue for writers and graphic design artists from the department to express themselves to the world. Success, for me, is not defined by trophies and plaques. Yes, it is an honor to be recognized for the hard work. What it's worth is priceless. PROBE is an extension of me. I stood by it, I also got depressed because of it, I have succeeded and fallen with it. It is a part of who I am. This is my legacy, and maybe this is what I will be remembered for. Thank you for believing in me. Thank you for dreaming with me.

Was it worth?

It is worth everything I am. It is worth everything I have. This was well worth the ride. I cannot please everyone, but I saved one life through this journey; my own. If I've captured the heart, the imagination, the attention of anyone during my time as editor I have accomplished my goal.

From my place I bid you all a solemn farewell. Stand tall, speak loud, and smile if at all possible.

**- Ram Kumar Mishra
Editor**

Diabetes and High Carbohydrate Diet: Is Methylglyoxal the Hidden Enemy?

-Dr. Arti Dhar
Assistant Prof

High dietary carbohydrates, increasing type 2 diabetes and the associated cardiovascular diseases in children and adults are major health issues globally with limited treatment options. The explosive increase in type 2 diabetes in the past 2-3 decades has been attributed to high dietary carbohydrates, especially fructose combined with a sedentary lifestyle (1). Type 2 diabetes is characterized by persistently elevated blood sugar/glucose levels and relative lack of insulin. A genetic predisposition has been found in many patients (2). Oxidative stress has been proposed as one of the causative factors for diabetes (3). The Western diet has high fructose content and high fructose is known to induce diabetes in animals. Methylglyoxal (MG) is a reactive dicarbonyl metabolite of glucose/fructose metabolism (4). The clinical significance of MG lies in the fact that it reacts with proteins to form advanced glycation end products (AGEs) (Figure 1).

AGEs are implicated in the pathogenesis of vascular complications of diabetes (5). Plasma MG levels in healthy humans are 1 mmol/L and are elevated two to four fold in diabetic patients (6). Under normal physiological conditions, the highly efficient glyoxalase system degrades MG into D-lactate with the help of reduced glutathione (GSH) and keeps plasma MG levels at approximately 1mmol/L or less (7). There is an increased body of evidence suggesting that increased MG formation in diabetes mellitus is linked to diabetic complications like retinopathy, nephropathy but the exact mechanism is far from clear. Incubation of vascular smooth muscle cells with 25 mmol/L fructose for 3 h significantly increases MG production and oxidative stress. It has been reported earlier that in vitro incubation of MG with insulin modifies the insulin molecule and impairs insulin-mediated glucose uptake in adipocytes (8) and incubation of cultured L6 muscle cells with MG (2.5 mmol/L) for 30 min impaired insulin signaling (9). Fructose-fed SD rats have elevated levels of MG, a product of fructose metabolism (10). It is possible that high carbohydrate-induced chronic elevation of MG causes cumulative pathologic changes that contribute to the development of insulin resistance and type 2 diabetes. MG (50 mg/kg iv) administered to 12-week-old male Sprague-Dawley (SD) rats for 2 h caused glucose intolerance and reduced adipose tissue insulin-stimulated glucose uptake (11). MG was also recently reported to induce pancreatic beta cell dysfunction and type 2 diabetes in Sprague-Dawley rats (12).

In the absence of a genetic predisposition the link between high carbohydrate intake and the development of diabetes mellitus is unknown at a mechanistic level. It may not be wrong to theorize that daily acute elevations of intracellular and plasma MG following high carbohydrate intake may induced insulin resistance and type 2 diabetes that is becoming a serious health problem globally. Further studies on specific and safe MG scavengers could be useful in preventing high carbohydrate induced insulin resistance and type 2 diabetes.

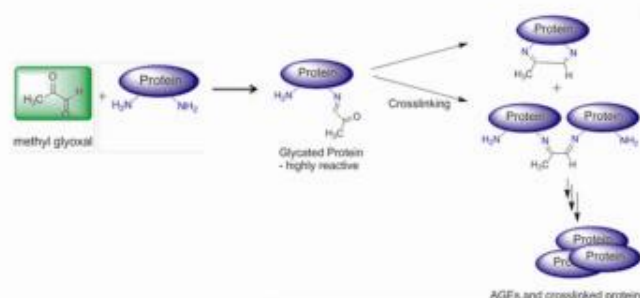


Figure 1: MG induced AGE formation.

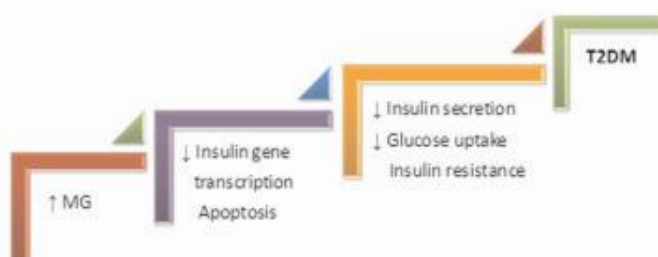


Figure 2: Mechanism of MG induced type 2 diabetes

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Dreams vs **REALITY**

-Venkat Koushik Pulla
Research Scholar

Days are nearing for Ganesh Chaturdhi, people are flocking in for donations (Chandaa's). I usually reject them without any hesitation, and kids go away with great disappointment. However, rekindling some sweet memories of childhood.

Those 9 Days of Ganesh Chaturdhi were a fairy tale for me. Even three weeks before the Ganesh Chaturdhi, youngsters in our gully used to discuss about the cost, decoration and plans for ganesh mandap. We kids somehow used to hear some broken words and incomplete statements through some means and get excited about festival season. The day before the festival we used to reach the place of mandap and assist elders in bringing small goods for construction of mandap. Sometimes we were asked to get some tools from our home; we used to feel proud like full air balloon. Soon after reaching home to grab the tool, scared look given by mothers punctured everything. Somehow we used to make our presence felt and give our small hands like squirrel helping lord rama to construct the bridge. Until the day of festival, we were not allowed to watch the idol, however they used to give a chance to glance the idol which was covered with dark cloth. We then calculate the length and breadth in terms of our heights and have deep discussion as if we have seen a seventh wonder. Strangely we gave less importance to beauty of the idol rather than height. Though there is only one day off on the festival, but we always feel that we had 9 days off. Because all throughout the 9 days we always discuss about the idols even in class rooms and plan our visit to watch best idols in the town. Soon after coming back to home in the evening, we scribble down home work briskly and then start our journey to watch idols in the town which begins with small get-together. We pray at each idol closing eyes, but I don't remember what I used to pray but I do remember that my next step up is doing situps. I guess those sit ups would surely have some scientific reason. But people believe that those were done to get rid of sins. Later our concentration would shift to prasadam and theertham. Soon after crossing the street, the discussion would begin about the taste and would continue till reaching next idol. After coming home stomach could not accommodate any more food and with utmost difficulty and to avoid strange looks of my mother I used to adjust food like a grain in gunny bag. These fascinations has made us to think beyond and developed interest to establish our own ganesh idol in 6th standard. My parents are conservative and did not allow me to waste time, but my strong will made them to give a nod partially. We got 50 rs from each family and bought idol. The resources we had would be enough to have some decoration. Then prasadam would be prepared by our mothers after requesting them and doing homework within time. Out of curiosity we also used to go for chandas or donations. Few people used to give scary look as if we have done a crime. (Although now am giving the same look for the kids who are coming to my home). Few people out of generosity used to give 5, 10, 20 Rs. We used to get one coconut for 5 Rs or less at that time.

Then somehow we established idol near to our home. I used to wake up and spare some time near the idol before going to school and requesting my friends grandma to look after it. By the time we come from school we used to see the balloons and other ribbons were lost and the shelter we made out of leaves and small sticks were blown away by the wind. Out of great difficulty we used to construct them again. The sad day would be when it rains; as we made shelter with small sticks and leaves the shelter would easily go off. Somehow we had managed it for 5 days and then gave to the people who are organising mandap in big way, after 9 days they used to dip our idols in the sacred water along with their idol. Then after I got busy with other work, could not spare time for the ganesh pooja. Days have changed and so as my ideologies. Now I like simple and modest festivals. I feel ridiculous to have 100 ganesh idols in one small village. Festivals are made to bring all the people together. Why can't all the villagers have single idol and celebrate? It is very economical in all aspects. The most important thing is all can dance once during the last day, just imagine when all 10,000 people of a village starts doing then mar together, so thrilling isn't it?

However apart from philosophy there lies the reality. Maybe in the past I might have done some sin during pooja, which made lord ganesh angry. Because of which the vehicle of lord ganesh (Rat), is punishing me during my animal experiments. I am so scared to handle them somehow am managing these days. But still some times rats jerk while handling, it makes my cool heart fierceful. The blood starts gushing into my arms and palm, forcefully making my hands to hold the animal firmly, eventually the rats starts giving weird sounds (qeeek qeeek). Crazy thing is that rats deliberately do weird things like turning its back away from our palm, briskly rotating its body when we hold the tail, sometimes rats will avoid us by standing with two hind legs and observe or give a look that am taller than you people. But it does not know that no matter what gimmicks it (rat) does, we will still handle them and finish the work irrespective of weird sounds. May Lord Ganesha does not keep this in mind and advise his vehicle (rat) to support me through out my work. It would be very cooperative that whenever I am holding an injection, it has to lay down and turn its dorsal side towards me. It would be really good that when I am measuring paw volume, it has to think that I'm washing its legs in some sacred holy water. It will be more exiting when rat opens its mouth watching the colour drug as if it is ready to drink fruit juice. It will be even more exiting when the animals behave exactly like what the master think. Maybe these are paranormal activities; it would surely happen in films like avatar but not in the real materialistic world. Thinking of reality always makes me feel depress, especially we day dreamers free-lance in dreams.. Any way thanks to the PhD for helping me to look back in the past and recapturing some nostalgic moments. Maybe if my animal works gets completed successfully, I would surely do sit-ups for *Rattus novorgicus* to show my gratitude.

Interview

**Somali Misra
Burgess, Ph.D
CEO & Research
Director
Strategic Out-
comes Services,
LLC**

1) Can you tell us about yourself and share your experience as health economist within a healthcare company or within a health research setting?

I did my B. Pharm from BITS, Pilani graduating in 1991 and then decided to pursue a Masters in Pharmacy Care Administration at the University of Georgia, in Athens, USA. After completing three trimesters in the Masters program, I applied for a PhD in the same department and once accepted, switched over to a doctoral program. I graduated with a PhD in pharmacoeconomics and outcomes research in 1998. My first job after graduate school was with a start-up consulting company named Strategic Outcomes Services (SOS). I was their third employee! While I had interviewed at different pharmaceutical companies as well, I found the consulting environment more intriguing and appealing at that time. I enjoyed my time at SOS – I was with them for about 5 years – and was happy that I had made the decision to take up a job within the consulting environment when most of the people around me were opting for industry positions. The consulting job gave me the opportunity to actually conduct the research as opposed to managing projects. Since I was with a start-up, we did not really have the luxury to pick and choose what types of projects we would work on in the initial early months. The advantage was that I was able to work on several different disease areas and on many different kinds of projects including conducting literature reviews, landscape analysis, and gap analysis; writing portions of Integrated Summary of Efficacy reports; building health economics models; doing SAS programming; and conducting statistical analyses. Since my didactic training in graduate school was mainly in health economics, I guess you could call me a “health economist” by training. But it was during my time at SOS that I started discovering the world of humanistic outcomes, health-related quality of life, and health outcome measures. My second stop was at another consulting company – PharMetrics – which specialized in large claims based analyses. It was a world rather different from what SOS was, but it rounded out my experience and expertise as a health outcomes researcher and allowed me to manage, maneuver, and analyze large databases. While I had

“played around” with some Medicaid and Medicare data while in graduate school, the 18 months I spent at PharMetrics gave me the opportunity to really dive deep into this area of health outcomes. Fortunately, 18 months was enough time to make me realize that while I had learnt a lot in this time frame, large claims analyses was not my “cup of tea.” I wanted to go back to doing research in health-related quality of life and patient-reported outcomes (PROs). This search took me to another consulting company, Mapi Values. Yes, I really loved the world of consulting and had made the conscious decision to stay with it in spite of multiple calls from head-hunters and a few industry job offers. At Mapi Values, a global boutique company specializing in PROs, I had the opportunity to develop and hone my skills in PRO research and was exposed to regulatory work. I soon realized that this was my true calling and continued to pursue this field of research with passion – from this point onwards, I would no longer be a true health economist anymore. My specialization in the area of PROs was sought after and I joined Allergan, Inc. I had finally made the switch to the industry side of the fence after over a decade of being in the world of consulting and joined the Global Health Outcomes Strategy and Research group at Allergan as a Director and oversaw several of their products and indications heavily dependent on PROs for both approval and promotion. My role at Allergan was truly global in nature allowing me to work not only on products in the US market, but also in Europe, Asia, and Australia. After three years at Allergan, I went back to consulting and joined Adelphi Values in 2011. As a Vice President in the company, I was primarily involved in developing the strategies for the company, business development, and providing senior strategic support to projects. In 2013 I made the decision to become an independent consultant and set up my own company that specializes in clinical outcomes assessments (COAs) – a term used by the US Food and Drug Administration (FDA) to encompass PROs, clinician-rated outcomes (ClinROs), and observer-rated outcomes (Obs-ROs) – and regulatory strategy.

2) Being a product of BITS, what other qualifications were needed to augment your Health Economics skills (Master’s of Public Health, epidemiology !!!)?

The undergraduate program in pharmacy at BITS gave me the basic foundation but did not equip me with any knowledge to pursue a degree in pharmacoeconomics or health outcomes. There were no courses offered or any exposure to this field of pharmaceutical research while I was at BITS. Hence I decided to pursue a graduate degree in the field to be able to build a career in it. It is therefore with this in mind that I would like to assist the faculty in Hyderabad in their efforts to provide elective options to the current students so that they have some

basic knowledge and foundation in this rather important research area within the pharmaceutical sciences field.

3) Can you say about the global challenges of health economics?

I don't think about it as just "health economics" because that is only one aspect of the field. The ECHO model is critical in the thinking and understanding of this area of research where E=economic, C=clinical, H=humanistic, and O=outcomes. While we as health outcomes scientists/researchers don't specialize in the clinical outcomes area, we do need to have an understanding of it to be able to apply the economic and humanistic outcomes within that framework. So, to me this question should be more about the global challenges of health outcomes. More than challenges, I see the huge advances made in this field in the past decade. With regard to PRO research, we see the guidance set forth by the FDA around the development and validation of PRO measures. Similarly, the European Medicines Agency (EMA) has issued a reflection paper to guide sponsors to do the same. Asian countries like Japan and Korea are also trying to establish their own guidelines and implement them. The challenge the sponsors face is that there needs to be an understanding of these guidelines and efforts made to follow them for successful approval of new products. The regulatory agencies need to be engaged and approval received for the use of these measures as endpoints in trials. Sponsors do the same. Asian countries like Japan and Korea are also trying to establish their own guidelines and implement them. The challenge the sponsors face is that there needs to be an understanding of these guidelines and efforts made to follow them for successful approval of new products. The regulatory agencies need to be engaged and approval received for the use of these measures as endpoints in trials. These guidelines often also apply to clinical measures as well thereby raising the bar for what can and cannot be used in trials as endpoints. This process is time consuming, expensive, and challenging and does not come with any guarantees of success. There was a time when pharmaceutical companies only focused on efficacy and safety of their products. Demonstrating this additional value was, and is sometimes still, considered an unnecessary hurdle forced upon them by the regulatory agencies. But the patients' voices need to be heard and incorporated into the assessment of outcomes for any product. I see the challenge as two sides of the same coin – the industry has to balance its ability to demonstrate that the product works (i.e., efficacy and safety) with its ability to tell a treatment-benefit story (i.e., PROs) and the vendors and consultants have to be able to convince the companies that the need to conduct this research is not just a "nice to have" but rather a requirement put down by the regulatory agencies (rightfully so) for the approval of new products. The coin remains the same – the end goal of meeting the needs of the regulatory agencies. For the health economics side, there are limited resources that need to be distributed, the health technology assessment policies are grey and keep evolving and therefore it is in constant flux. This also makes it a highly dynamic field.

4) Outline the skillset/ experience needed for this job.

It is difficult, rather impossible, to provide a standard set of skillsets needed for every job in the field of health outcomes. But as a starting point, I would encourage students to at least get their Masters, preferably their PhD in this field. Hone your research and analysis skills. Good public speaking and presentation skills are a must. To me there is never a time when you will stop learning to get better at these – even after over 15 years in this field, I am still learning how to improve at developing better presentations and give good lectures! Purely from personal experience I would say that you should try both consulting and industry. There is of course the option of going into academia. While I love giving presentations and lectures, I opted not to pursue a career in academics for personal reasons. Academia is a great option as well and you should seriously consider it if you are passionate about research and teaching. Of course a PhD is extremely critical if this is the path you wish to follow.

5) Name the key organizations in India dealing with health economics.

Almost none. There are some companies who create surveys for publication purposes and public health research but not for labeling or promotion. Public Health Foundation is involved in some of this research. Groups like Parexel, United Health Group, and WNS do some of the literature reviews, gap analyses, etc. Locally, Novartis has a modeling group currently headed by an ex-BITSian Simu Thomas.

6) Can you describe any health challenge in Indian scenario for next five year?

With regard to research in the field of COAs, or specifically PROs, the challenge is that the Indian regulatory body does not require any evidence in this area for approval of a new product. This means that there is no immediate demand for this type of research. Which, to me, is rather unfortunate because it is of high value to be able to provide a treatment-benefit and risk profile story. Till that need is born, PRO research in India will be lagging behind the rest of the world and the voice of the patient will not be incorporated into the treatment-benefit story.

7) What are the perks (pay scale) offered to a health economist in India?

Unfortunately, since I have not worked in India I don't have first-hand experience, but based on conversations I have had, it seems that salaries are comparable to other fields for recent graduates.

8) Any message for our students.

Step out of the confines of thinking of the "pure" pharmaceutical research arenas and explore the world of health outcomes. You are fortunate that your professors are trying to provide you with some electives in this field to give you a sense of what it is. That is a 100% better than the opportunity we had when we were undergraduate students. Embrace the opportunity and give those electives some thought and try it out. You have nothing to lose! Who knows? You may actually get fascinated by them and pursue a graduate degree in it and have a successful career in it. Some of us do!

Team Probe is grateful to its Editor-in-chief for arranging this interview column via email.

A World without bee, how can it be?

- Francis Desire Bomba Tatsinkou
Visiting Research Scholar

I would like to share my passion for bees with you. A Honey-Bee goes around flowers to make honey, which is used by almost everyone. But do you know that bee is the most important creation for our survival? Albert Einstein once said "if the bee disappears from the surface of the earth, the whole humanity would not last more than 5 years.. No more bees, no more pollination, no more plants, no more animals, no more man." Who knows if he had actually performed complex mathematical calculations to explain the result in these two lines?

Bee is a pollinator insect, which, during the collection of pollen and nectar from flowers, deposits the seeds of pollen which eventually results in fruits that we consume daily. Studies have showed that bee is responsible for 70 to 80 % of pollination worldwide, thus leading to 70 to 80 % fruit/grains production. Rest 20 to 30% is attributed to wind, other insects and birds. Now it is clear that bee is responsible for 80 % of fruits and also responsible for 80 % of all new-plantation because every fruit contains at-least one seed which is going to germinate and eventually becoming a plant, which yields oxygen during photosynthesis. Disappearance of bees will initiate a chain reaction leading to disappearance of plants. It might result in draught, climate imbalance and oxygen shortage. Finally it will lead to unfortunate end of man on earth.

This entirely means blowing the whistle for the protection of this magnificent and fragile insect which can be saved by avoiding the use of artificial fertilizers and pesticides in the industrial farming which are main causes of its extinction.

In the end, I would like to thank Prof. Yogeewari for

helping me to receive RTF-DCS scholarship and allowing me to join her research group. After joining the department, I was very excited to see experienced researchers and variety of equipment. People here in the department are warm hearted and work environment is good.

It is well known that, in spite of elaboration of several types of drugs (non steroid anti-inflammatories) to get around Pain is the cause of about 80% of medical consultations and is associated to almost all types of illness. In-spite of having many classes of painkiller drugs, antipyretics, spasmolytics, opioids, narcotics,steroid and NSAID's, the cure of pain still poses serious problems like resistance and side effects. Hence, the question remains "could phytotherapy not be an alternative for pain treatment?"

The project on which I'm working here focus on neuropathic pain treatment with readily available medicinal plants. It have been suggested that 80% of the population in underdeveloped countries resort to phytomedication for their heal problems, due to the powerty or unavailability of drugs. When I started my work, I found that aqueous and methanolic extracts of the plant I have chosen, have shown promising activity on acute pain models like chronic constriction injury (CCI). I have learnt many techniques and have generated lots of data, for which I am thankful to the department.

I shall not know how to finish without thanking the NAM Center which offered me this scholarship trough the Indian government that is working diligently for promotion of scientific research generally and the research in the field of the pharmacy in particular.

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LOO PHOLES of the Drugs and Cosmetics Act

- Srividya Myneni
B.Pharm 4th Year

In India, cosmetology is a multi-billion dollar industry with lots of cosmetic products being launched every year into the market. Are these cosmetic products properly regulated? Are the ingredients properly checked? Are the consumers getting quality information about them?

Cosmetic products in India are regulated under the Drugs and cosmetics Act 1940 and Rules 1945, Labelling Declarations by Bureau of Indian Standards (BIS). BIS sets the standards for cosmetics for the products listed under Schedule 'S' of the Drugs and cosmetics Rules 1945.

According to the labelling requirements as per drugs and cosmetics act 1940, a cosmetic product being sold in India should contain label which should give list of ingredients and the percentage of each ingredient used. However it is not followed in many cases. Even if the ingredients are mentioned, a common man won't be able to understand what health risks they might pose. Another loophole associated with drugs and cosmetic act is, it exempts products weighing less than 30 g are exempted from mandatory labelling on the premise that they are too small in size to accommodate such elaborate information.

Enigmatic Regulations: Ambiguity is found with respect to the cosmetic ingredients in the Drugs and Cosmetics Act. For instance, Petrolatum, more commonly known as petroleum-jelly, a petroleum by-product doesn't find a mention under the Drugs and Cosmetics Act. Although approved by the US FDA, it is banned in the EU for its potential carcinogenic properties. Parabens which are commonly used as preservative in cosmetics are becoming increasingly controversial, because they have been found in breast cancer tumour (an average of 20 ng/g of tissue). However small the concentration, these chemicals do get ingested in the body, causing bio-accumulation in the long-run.

Now present trend is with nanoparticles being used in various cosmetics. For instance, nanopigments such as titanium dioxide (TiO₂) and zinc oxide (ZnO) are used primarily in sunscreens for their capacity to reflect and scatter UV light. TiO₂ and ZnO show little evidence of toxicity in their natural forms. However, when these ingredients are turned into nanoparticles, they may be toxic when inhaled or absorbed through the skin. Very little research has verified the safety of nanoparticles, whose physical properties change when the particles become that small. Other nanoscale materials such as carbon fullerenes (also known as bucky balls) are used because of their antioxidative properties. Should the label include the term nano or not? But a label with no explanations could unleash alarmed reactions in the population. From 11 July 2013, under EU cosmetic regulation 1223/2009, all ingredients present as nanomaterials have to be indicated on the package with the term 'nano' in brackets; 'nano' means: 'an insoluble or

biopersistent and intentionally manufactured material with one or more external dimensions, or an internal structure, on the scale from 1 to 100 nm'.

Heavy metals like lead, arsenic, mercury, aluminium, zinc, chromium and iron are found in a wide variety of personal care products including lipstick, whitening toothpaste, eyeliner and nail colour. Some metals are intentionally added as ingredients, while others are contaminants. Exposure to metals has been linked to health concerns including reproductive, immune and nervous system toxicity.

According to the Drugs and Cosmetics Acts and Rules of India, rule 145 D and 135 A prohibits manufacture and import respectively of cosmetics containing mercury compounds. In eye care products it is completely prohibited and in non-eye care products it should not be more than 0.007% by weight. However, inorganic ammoniated mercuric chloride and iodide are found mostly to be used in skin lightening creams. Mercury in these creams inhibits the formation of melanin, resulting in a lighter skin tone and it is proved in a study that the popular brand 'Fair and Lovely' has mercury in it although it doesn't mention it on the label. According to a study when 'Fair and Lovely' is applied on mice for one month mercury was found getting accumulated in the liver, kidney and brain tissue in micrograms range, but if it is applied daily it may cause bioaccumulation and can lead to serious kidney toxicity.

A recent test conducted by CSE (Centre for science and environment) showed that mercury is found in 14 fairness cream in the range of 0.10 parts per million (ppm) to 1.97 ppm when it is totally banned in cosmetics. Aroma Magic Fair Lotion, a product of Blossom Kochhar Beauty Products Pvt Ltd, had the highest mercury level at 1.97 ppm, followed by Olay Natural White (1.79 ppm), a product of Procter and Gamble, India, and Ponds White Beauty (1.36 ppm) of Hindustan Unilever Ltd. Use of chromium is prohibited in India, but is still found in lipsticks. Chromium was found in 15 out of 30 lipsticks tested by CSE in the range of 0.45 ppm to 17.83 ppm. Hearts & Tarts (080V) shade of colour Bar had the highest concentration. Chromium is strongly linked to immune and respiratory toxicity, as well as systemic toxicity. Animal studies show tumour formation at low doses. US recognises nickel as an impurity in certain colourants. In India, there are no set limits for nickel in colourants and finished products. Nickel was found in 13 out of 30 products tested in the range of 0.57 to 9.18 ppm, with Lancome Labsolu Nu-204 of L'Oreal India Pvt. Ltd. containing the highest concentration.

Amendments in existing laws have to be made in labelling cosmetics, check has to be put on the ingredients that are being used in them, ADI limits have to be introduced, trace presence of impurities have to be mentioned, limits for all the heavy metals have to be included. Above all, all the laws have to be stringently followed.

Music Therapy



"Music is profound in what it does. If there was a drug that did what music does for people with Alzheimer's, it would be the biggest blockbuster ever created in the history of the world."

- Michael Rossato-Bennett, Director, "Alive Inside: A Story of Music & Memory"

Oliver Sacks

"If he is asked how to do these things, he cannot say, but he does them. Whatever involves a sequence or pattern of action, he does fluently, unhesitatingly."



Clive Wearing
with wife
Deborah Wearing



"Music can lift us out of depression or move us to tears - it is a remedy, a tonic, orange juice for the ear. But for many of my neurological patients, music is even more - it can provide access, even when no medication can, to movement, to speech, to life. For them, music is not a luxury, but a necessity."

Henry Dryer

Dementia

Dementia is not a specific disease. It's an overall term that describes a wide range of symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities. Alzheimer's disease accounts for 60 to 80 percent of the cases. It is a progressive disease, where dementia symptoms gradually worsen over a number of years. In its early stages, memory loss is mild, but with late-stage Alzheimer's, individuals lose the ability to carry on a conversation and respond to their environment. Although current Alzheimer's treatments cannot stop Alzheimer's from progressing, they can temporarily slow the worsening of dementia symptoms and improve quality of life for those with Alzheimer's and their caregivers.

Music therapy is one of the most common treatments for Alzheimer's disease. The effectiveness of music therapy can depend on the quality and length of treatment as well as other factors. Some of the most common effects of music therapy are improved social behavior, like interpersonal interactions and conversations. It improves social behavior by reducing wandering, restlessness, and agitation.

"Music can lift us out of depression or move us to tears - it is a remedy, a tonic, orange juice for the ear. But for many of my neurological patients, music is even more - it can provide access, even when no medication can, to movement, to speech, to life. For them, music is not a luxury, but a necessity."

- Oliver Sacks, Neurologist-Author

The exact reason behind the effectiveness of music therapy is not yet known, but recent investigations of memory functioning in both normal and amnesic subjects distinguish between procedural memory or information based on skills learned implicitly and without awareness, and declarative memory or information based on specific facts acquired explicitly and with deliberate intention. Studies have shown that procedural and declarative memories are not uniformly impaired in subjects with neurological disease. An 82 year old musician with Alzheimer's disease showed a preserved ability to play previously learned piano compositions from memory while being unable to identify the composer or titles of each work. He also showed a preserved ability to learn the new skill of mirror reading while being unable to recall or recognize new information. Another case is that of Clive Wearing, a British musicologist, conductor, tenor and keyboardist who suffers from chronic anterograde and retrograde amnesia. He lacks the ability to form new memories, and also cannot recall aspects of his past memories. His case has been described in Oliver Sacks' book, "Musicophilia: Tales of Music and the Brain". It clearly shows the existence of procedural and declarative memory. Clive can shave, shower, look after his toilet, and dress elegantly, with taste and style; he moves confidently and is fond of dancing.

Dementia and Music Therapy

- Shreya Jain

B.Pharm 3rd Year

He talks fluently and abundantly, using a large vocabulary; he can read and write in several languages. He is good at calculation. If he is asked how to do these things, he cannot say, but he does them. Whatever involves a sequence or pattern of action, he does fluently, unhesitatingly. Because of his illness, his face often appeared tight with torment and bewilderment. But when he was conducting his old choir, he did this with great sensitivity and grace, mouthing the melodies, turning to different singers and sections of the choir, cuing them, encouraging them, to bring out their special parts. It is obvious that Clive not only knew the piece perfectly, how all the parts contributed to the unfolding of the musical thought, but also retained all the special skills of conducting, his professional persona, and his own unique style. The cases discussed above involved patients who were accomplished musicians and possessed musical skills. Music therapy works just as well for people without musical skills but who used to enjoy music before their illness set in. Individualized music may be used as an intervention for the management of agitation in Alzheimer's Disease and Related Dementia (ADRD). The intervention involves carefully selected music, based on the person's preference, prior to the onset of cognitive impairment. Scientists theorize that music may be used as a means of communicating with the person even in the advanced stages of ADRD when the person has an impaired ability to interpret environmental stimuli. It is further theorized that the presentation of individualized music will provide an opportunity to stimulate remote memory. The elicitation of memories associated with positive feelings will have a soothing effect on the person with dementia, which in turn will prevent or alleviate agitation. "Alive Inside: A Story of Music & Memory", a recently released documentary at the Sundance Film

Festival, follows social worker Dan Cohen, founder of the nonprofit organization Music & Memory, as he fights against a broken healthcare system to demonstrate music's ability to combat memory loss and restore a deep sense of self to those suffering from it. One of the central characters he works with is a 90 years old Alzheimer's patient named Henry Dryer, who was featured in a video posted online that went viral. The clip begins with a video of Henry looking largely unresponsive to the outside world, unable to recognize his own daughter. Then he was given a pair of headphones to listen to Cab Calloway, his favorite artist. The music energizes him, awakens him and helps bring back old memories. The once largely unresponsive Henry, unable to even answer questions with a simple yes or no, now becomes animated and taps his feet and sings along with the music and is able to answer questions asked to him about how he feels about the music he's listening to. As Dr. Oliver Sacks says, "Henry has reacquired his identity for a while through the power of music."

Message from HOD

This Interview was taken by our Editor Mr. Ram Kumar Mishra and compiled with the help of Santosh V. (B.Pharm 3rd Year)

I am happy to note that “**PANACEA**”, the pharmaceutical association of Department of Pharmacy; BITS-Pilani, Hyderabad Campus is coming up with another issue of its bimonthly magazine “**Probe**”.

For the magazine, this is the third year in continuation and a lot of people have contributed extensively to it. I would like to congratulate Dr. Sajeli Begum, the Editor-in-Chief; Mr. Ram Kumar Mishra, Editor; and all other editorial board members who have contributed to this issue as well as previous issues. I hope this would continue in the future, and we keep on bringing up new issues and spread more awareness about the profession at large to the audience of the magazine.

Moving forward, we can incorporate some of the articles or maybe news items which will be more beneficial for the community because I believe that Pharmacy as a profession should look after the community. For example, common problems faced by students in hostels: prevention of communicable diseases, or water-borne diseases, the precautions students can take, or maybe some of the first-aid things which might be of interest to faculty members as well as students staying in the campus or working in labs. Not to mention about snake bites in the campus, if we know the precautions and also can use first aid, we might save a valuable life.

If we include this in the magazine, people from outside the department might also start to appreciate what we are doing. We can also think of communicable diseases like Chickenpox or Conjunctivitis; we can educate students about the preventive measures which should be taken. This is basically about awareness; we have to educate people about diseases, so that they can stay healthy and live a prosperous life.

I would like to again congratulate the entire team and hope that going forward; this will be even more successful. I would like to thank all the people who took time out for writing articles in this issue of probe.

Thank you.

Dr. Shrikant Y. Charde

About the HOD

Dr. Shrikant Charde completed his B Pharm (1999) from Nagpur University and did his M Pharm (2001) and PhD (2008) from BITS-Pilani. He has completed PG Diploma in Patents Law from NALSAR, Hyderabad in the year 2009.

He is associated with BITS-Pilani since 2001 and was transferred to Hyderabad Campus of BITS in July 2013. His areas of interest are Novel Drug Delivery Systems with special emphasis on transmucosal drug delivery and nanotechnology based delivery systems, Analytical and Bio-Analytical Method Development and Intellectual Property Rights. He is currently guiding 4 PhD students and has supervised projects of more than 75 B. Pharm and 30 M. Pharm students.

He is a life member of Association of Pharmaceutical Teachers of India and Controlled Release Society Indian Chapter. He has completed various industrial and government sponsored projects. Dr. Charde has published several technical reports, research papers, and attended several conferences of international and national level.

How to Change the Resolution of Publication Quality Images.

We often get the question “Create high resolution 300dpi images for journal publication”? Here in the department, we scholars leave our life behind to finish our work and we strive hard to write a research paper to showcase our findings to the scientific community. We have many graphs, interaction diagrams, pathways and flowcharts as images. The most common requirements for publication quality images to be uploaded to a publisher website are (a) Image should be in *.tiff format, and (b) minimum resolution should be 300 d.p.i. (dots per inch).

While common image editing programs on Microsoft windows based computers can save and edit files in tiff format, but their inability to change the resolution sometimes is tricky. In this article I am going to describe a handy way to change resolutions of images using a free program named “Gimp”

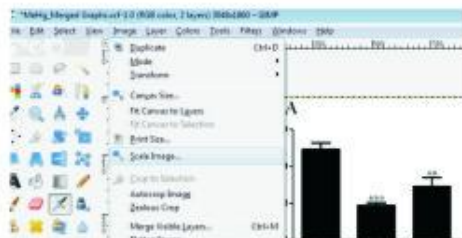


Figure 1. Select Scale

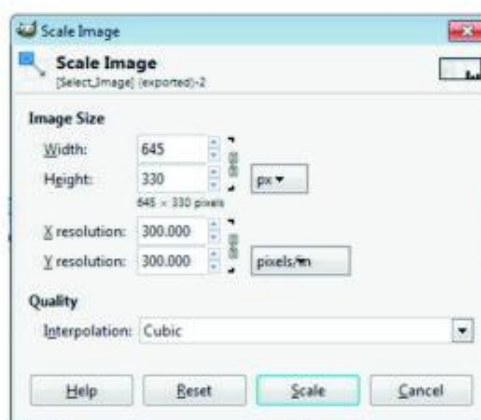


Figure 2. Change resolution

1. Download Gimp from www.gimp.org and install on your system.
2. Right click on image> Edit with gimp.
3. The image opens in gimp. Now select “Image>Select Image”
4. Change the values in X resolution and Y resolution boxes, Click Scale.
5. Click “File>Export to, provide the image name ending with “.tif”, select none>Ok.

In the Department:

Ph.D. Awardee:

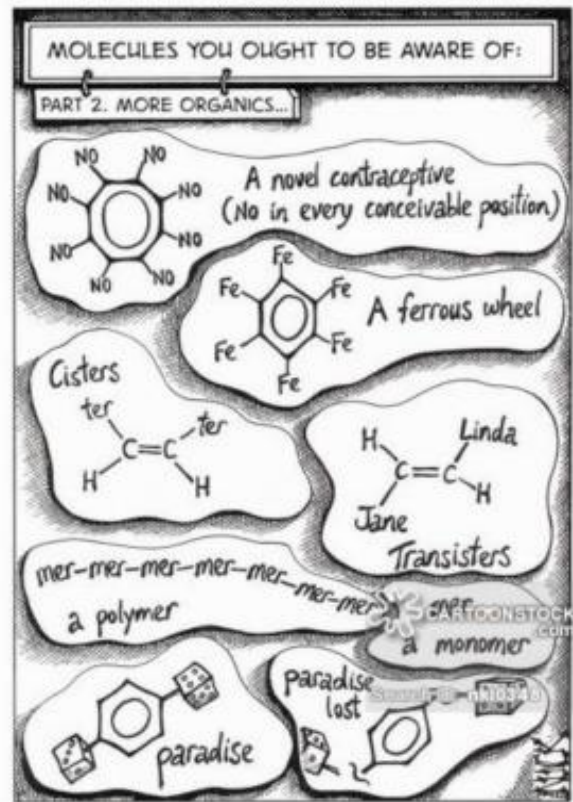
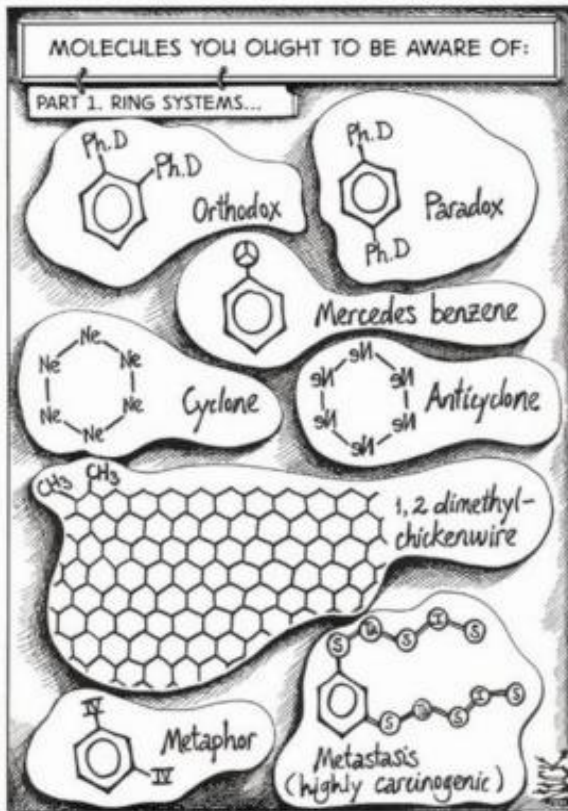
Dr. Ramani A.V.
Dr. Monika Swemwal
Dr. Prtesh Bhat
Dr. Mallika Alwala

Thesis submitted by:

Mr. N. Aditya
Mr. Jean Kumar
Mrs. Patrisha J.T.

New Ph.D. Scholars:

Miss.Shubhmita Bhatnagar
Miss. Reshma R.
Mrs. Prakruti Trivedi
Mr. Anup Jose
Mr. Omkara Swami M.
Miss. Preeti Jha
Mr. Vishnu Kiran



Fun Zone

- Sumeet Chawla
B.Pharm 3rd Year

Customer gets a topical cream. Direction: apply locally two times a day. Customer says to the pharmacist: "I can't apply locally, I'm going overseas."

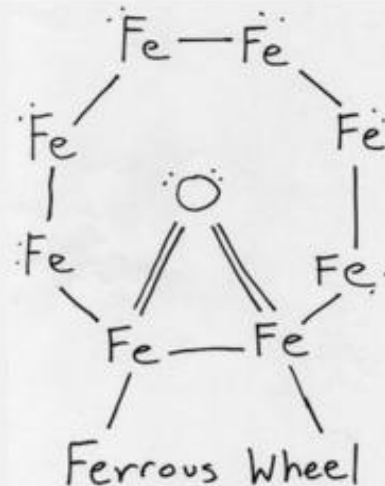
A pharmacist is going over the directions on a prescription bottle with an elderly patient. "Be sure not to take this more often than every 4 hours," the pharmacist says. "Don't worry," replies the patient. "It takes me 4 hours to get the lid off".



A pharmacist looks out the front of the store and sees a woman holding a bottle jumping up and down in the parking lot. The pharmacist walks out to the parking lot and asks the woman what the matter. She replies "I saw it said 'Shake Well' after I took it".

A miracle drug is one that has now the same price as last year.

Courtesy: www.sciencedump.com



Conference Alerts:

Mark these dates in your calendar and make sure you attend a few of these!

Compiled by Mahibalan, Research Scholar

1. 10th NCRI Cancer Conference, November 2-5, 2014, Liverpool, UK
2. Pain Medicine Symposium 2014: Evolving Advanced Pain Therapies, November 6-9, 2014, Jersey City, US
3. HIV Drug Therapy in the Americas 2014, November 7-10, 2014, Sao Paulo, Brazil
4. Cell Symposia: Hallmarks of Cancer Asia, November 9-11, 2014, Beijing, China
5. Advances in Cell Based Assays, November 11-12, 2014, London, UK
6. Clinical Trials in CNS, November 11-12, 2014, London, UK
7. EuroPeptides 2014, November 18-19, 2014, Berlin, Germany
8. EMBO, EMBL Symposium: Frontiers in Metabolism: From Molecular Physiology to System Medicine, November 17-20, 2014, Heidelberg, Germany
9. 2nd International Conference on Agricultural and Food Engineering (CAFEi2014), December 1-3, 2014, Kuala Lumpur, Malaysia
10. World Cancer Congress 2014, December 3-6, 2014, Melbourne, Australia
11. British Pharmacological Society Annual Meeting (Pharmacology 2014), December 16-18, 2014, London, UK
12. PI 3-Kinase Signalling Pathways in Disease, December 13-18, 2014, Vancouver, Canada
13. Host Response in Tuberculosis, December 22-27, 2014, Santa Fe, US
14. 12th Winter Conference on Medicinal & Bioorganic Chemistry, December 25-29, Steamboat Springs, US
15. 14th International Congress of Ethnopharmacology, Puerto Varas, Chile
16. 2nd International Symposium on Emerging Trends in Chemical and Pharmaceutical Sciences and Pharma Chem Expo-2014, October 15-17, 2014, CSIR-IICT, Hyderabad
17. Recent Pharmacological Trends for Shaping Future of Drug Discovery and Development, October 17-18, 2014, M.M College of Pharmacy, Haryana
18. The INDO-US Conference on Molecular Modelling and Informatics in Drug Design, November 3-6, 2014, NIPER, Mohali
19. 1st IBRO/APRC Chandigarh Neuroscience School, November 3-8, 2014, Panjab University, Chandigarh
20. National Workshop on Ethics in Scientific Writing and Plagiarism, November, 7-8, 2014, ISS University, Jaipur
21. National Seminar on Opportunities in Medicinal Plant Research, November 29-30, 2014, Jadavpur University, Kolkata

Celebrations:



'In a classroom full of students with different learning abilities, the teacher faces a formidable challenge -- how to teach each child to his or her maximum potential. While some children in the class may find the lesson too mundane or boring, if it is "dumbed down," other children may find it difficult to cope with difficult concepts. So how does a teacher teach at an optimum level, such that both sets of extreme learning abilities are nurtured?

Teachers do play a tough Balancing Act.'



On 5th September, 'Teachers Day' was celebrated in the department as a gesture of gratitude from the students of Pharmacy. The staff of the Pharmacy Department was present and spoke a few words for the students indicating their vision for their students.

The students in turn thanked them by saying that their life changed after coming in touch with such wonderful teachers.

खुल के जी ले!

खुल के जी ले, खुल के जी ले
ओ सावरे, बेपनाह तू आ ओढले
वो छुपी हंसी, बातों में है नरमी
आँखों में खोया जैसे है कोई भीगा जहाँ
भुला इसे तू ओ बावरे, खुल के जी ले!

देख फलक तक, उंचाइयों का अपना है मजा
बारिश की बूंदों ने भी मट्टी को रंगा
रंग ले तू भी इन यादों को अपनी तरह
खुबसत हो जाएँगी ये पल, जी ले जी ले
ओ सावरे ओ बावरे ना रह यु सहमे!

भटकती है बातें बदलता है रश्मि
नदारद है इस दुनिया से तू क्यों खोया हुआ
नकिल उस आँचल से, देख रोशन हुआ जहाँ
छाओ से हट, अपनी परछाइयों को भी जरा देखले
मुख्तसर है जदिगी, खुल के जी ले!

पूछे ये दुनिया, वो फैले नशिन की तू है कहाँ
कुछ भी नई मुहल, महज चन्द्र भूल है हुई
तोड़ इस सदफ को, कर सपनों को, भावनाओं को आगाज़
दे अपनी खोई कल्पना को उड़ान जन्दिगी हो जाएगी नहिल
ओ सावरे खुल के जी ले, ओ भूले खुल के जी ले!

-Amardeep
M.Pharm 2nd Year



OF
A

Research
Scholar

Staying in hostel

Female:

Food: Whatever is available and edible in mess² and cafeteria.

Regulars: Cafeteria tea.

Add-on: Amul parlour after dinner.

Male: Extinct species

Staying outside

Male (single): typically shortcut receipts, bad to taste but quite filling. Typically one cooked food is enough for two time meal. Regulars include cafeteria breakfast and lunch. Tea sessions are add-on.

Female (single or married): Seek perfection, hence typically take more time while cooking. Choice of recipe depends on time and grocery available. Regulars include tiffin box and cafeteria lunch.

Male (married): Despite of being considered as head of family, they have no option, but to eat whatever is served. Most of these kind staying in nearby places can be seen running home by 1 pm. Regulars: none in particular. Add-ons: none in particular.

-Ram Kumar Mishra
Research Scholar

PROBE: Volume 3, Issue 2, 2014



Birla Institute of Technology and Science, Pilani
Hyderabad Campus

CLASS OF 2015



BACHELOR OF PHARMACY (HONS.)

Picture Gallery



Birla Institute of Technology and Science, Pilani
Hyderabad Campus

CLASS OF 2015



MASTERS OF PHARMACY



Birla Institute of Technology & Science, Pilani
Hyderabad Campus



PROBE

The next generation explorer

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