HIMEDIA®
For Life is Precious

A HiMedia Newsletter

Lab to Tab™

ACCESS TO INTERESTING BIOSCIENCES STORIES FROM YOUR TAB

HiMediaLaboratories™ Newsletter Volume - 8 | December 2018

Message from CEO

We are proud to announce that our very first article under this segment is **"Five Grand Challenges of Indian Science"** by the most Eminent Scientist **Dr. Raghunath Anant Mashelkar**. Having his thoughts in our newsletter is like having shiny and glittering feather in our cap. We thank Dr. Mashelkar for writing this article for our Newsletter, inspite of his busy schedules. It was truly an honor interacting with such a motivating Scientist. Apart from this few more interesting articles are in our platter.

Once again a warm welcome to one and all to our Newsletter, "Lab to Tab™", December-2018, issue. First of all, I express my deep gratitude for the splendid response to our last "Lab to Tab™" issue. Your response motivated me and my team to launch the next issue in a short time. We are always keen to take our products and services to the next level, and so with the newsletter too. We are introducing a New Segment in the newsletter which will serve as rich diet for your curious minds and brains. The segment is **"The Science Galaxy"** wherein, we will be publishing the articles, carved and crafted by Top Leaders/Scientists/Technocrats/ business tycoons exclusively for HiMedia "Lab to Tab™" newsletter.

Selective Media in Microbiology : Right choice of media for isolation and growth of the desired microbes in pure form, is a very crucial step in any microbiological studies. High cost and stringent process controls for manufacturing of culture media, makes it challenging for their consistent availability. Nevertheless to provide highly reproducible and consistent results, we are manufacturing and supplying an extensive range selective media. You would love to read more about this topic today.

Hydroponics-Soilless Farming : Hydroponics means growing plants in mineral nutrients dissolved in water. It can solve many problems of our conventional agricultural sector, as it is water-saving-eco-friendly technology giving us healthiest food and life style. HiMedia's higronics® division is a One Point Solution for all hydroponics applications. An introductory article on this is a special treat for you.

Explore Hassle-Free Extraction with HiMedia : Proper extraction of DNA/RNA from any biological specimens plays a vital role in molecular biology. Conventional protocols, and manual extraction have certain limitations. Our automated extraction system is a solution that simplifies it with reproducible yields. It aims at replacing bench top processes with robotic system. You can read more about this issue.

Marketing and Sales- The strength of HiMedia Labs : Understanding the client's need, market demand and providing cost effective solutions/services is one of the important marketing strategies of HiMedia. Hence, we have been innovating cost effective, customized and bulk quantity products as per the customer's requirements. We disclosed in this issue how we bring our products at your door step.

Enjoy reading and do write to us at info@himedialabs.com or techhelp@himedialabs.com with your recommendations and requirements so that we could design and put into action newer plans that'll serve you better.

The Science Galaxy

Five grand challenges of Indian science

by
Dr. R.A. Mashelkar, FRS
National Research Professor

The Nobel Laureate Richard Feynman had famously said, 'the difficulty with science is often not with the new ideas, but in escaping the old ones. A certain amount of irreverence is essential for creative pursuit in science.'

The first grand challenge before Indian science is that of building some irreverence. Our students are too reverent. Our existing hierarchical structures kill irreverence. Promoting irreverence means building the questioning attitude. It means education systems that do not have the rigid unimaginative curricula, it means replacing 'learning by rote' 'learning by doing' and then to `learning by creating' and doing away with the examination systems with single correct answers.

More often than not, in our systems, paper becomes more important than people. Bureaucracy overrides meritocracy. Risk taking innovators are shot. Decision making time cycles are longer than the product life cycles. Therefore,

the second grand challenge is that of creating an 'innovation ecosystem', in which questioning attitudes and healthy irreverence can grow.

The third grand challenge is of creating truly innovative scientists, who see what everyone else sees but think of what no one else thinks. The 2005 Nobel Prize winners for medicine, Warren and Marshall, for instance, were such innovators. Everyone had thought that the cause of gastritis inflammation and stomach ulceration is excessive acid secretion due to irregularities in diet and lifestyle. Warren & Marshall postulated that the causative agent was, a bacterium called Heliobacter pylori. They were ridiculed but they stuck to their guns. They saw what the others did not see. And they were proved right.

The fourth grand challenge is the ability to pose, rather than merely solve, big problems. For example, James Watson felt sure that it was going to be possible to discover the molecular nature of the gene and worked hard at it — even to such an extent that he was fired from the Rockefeller Fellowship that he had. Einstein, when he was 15 years old, asked himself what would the world look like if [he] were moving with the velocity of light. This big question led finally to his special theory of relativity.

The fifth grand challenge is to create new mechanisms by which out of the box thinking will be triggered in Indian science. In the early nineties, when I was the Director of the National Chemical Laboratory, we tried to promote this by creating a small "kite flying fund", where an out of the box idea with even a one in one thousand chance of success of would be supported. Bold thinking was applauded and failure was not punished. The result was remarkable 'free thinking' that gave us a quite a few breakthroughs.

When I moved to Council of Scientific and Industrial Research (CSIR) as Director-General in mid nineties, we created a “New Idea Fund” with a similar objective. Here, over time, it turned out that it was not the lack of funds, but it was lack of great ideas that was the bottleneck!

In the year 2005, the Nobel prize for physics was shared by Glauber, Hall and Hansch, a controversy erupted since many Indian scientists felt that it should have been shared by E.C.G. Sudarshan, a scientist of Indian origin. In the year 2009, we did better. A scientist of Indian origin, Venky Ramakrishnan shared the chemistry Nobel prize with Steitz and Yonath. The fact that Venky was born in India was a cause for great Indian celebration. Next, will we have a Nobel prize for an Indian working in India?

The potential Ramans and Ramanujams are there even today somewhere. We need to find them early enough and nurture them. For this, we need to recognise that there is no intellectual democracy; elitism in science is inevitable and needs to be promoted.

Dr. Raghunath Anant Mashelkar

Dr. R. A. Mashelkar, Eminent scientist, former Director of the Council of Scientific & Industrial Research (CSIR). He is known for his contributions to India’s National Chemical Laboratory (NCL) and CSIR, multiple ‘Mashelkar Committees’, and a successful campaign against foreign patents. Currently, he is the President of Global Research Alliance and the Chairperson of the National Innovation Foundation of India. He is an ambassador for innovation and R&D across the world and also on the Board of Directors of several leading companies. He has 28 patents, 25 books, 286 research papers, and 25 articles in his credit.

He has received honorary doctorates by 38 universities globally and also honored by a plethora of 50 prestigious awards such as Padma Vibhushan, Padma Bhushan, Padmashri, Business Week Star of Asia Award, JRD Tata Corporate Leadership Award, Shanti Swaroop Bhatnagar Prize and the list is endless. He is the 3rd Indian fellow engineer of the Royal Society, UK and the 1st Indian fellow of National Academy of Inventors, US. Dr. Mashelkar continues to work for developing nations and underprivileged people everywhere.

THE BIG WORLD OF TINY MICRO ORGANISMS

Ms. Chitra Ramesh Adhangale
Deputy R&D Manager,
Microbiology Division

She is an accomplished microbiologist with her post-graduation from University of Mumbai. She has completed Diploma in Clinical Research Trials, Regulatory Affairs and Patents Law from PEXA. She is involved in new projects and product development. She has rich experience of QA & QC and has expertise in analytical and advanced instruments in Microbiology. Earlier she was involved in academics for teaching graduates and undergraduates.

Microbiology is the study of small living beings not visible to unaided eyes. These tiny creatures are called as microorganisms, which encompasses big generic groups like bacteria, fungi, micro-algae, protozoa and viruses.

How microorganisms impact our world

We can find a wide variety of applications for microorganisms in our professional and domestic life:

- Microbes are basic models for understanding cellular process and relate the same for higher animal genetics.
- Study and identification of microorganisms from clinical, food and dairy products, water and environmental samples has helped in understanding their mechanism of action in spreading in an epidemic. With this understanding breakthroughs have been made to curb this epidemic.
- Microorganisms are useful in production of range of antibiotics, vitamins, bioactive compounds, recombinant proteins, vaccines and also in breweries, bakery and waste treatment.

Getting to know microbes up close and personally.

By exaggerating we can say microbes are everywhere like air. But for studying different microbes, they have to be isolated in pure form, and grown on nutrient media for getting sufficient amount. The challenges here are right choice of media for isolation of required microbes, to differentiate one from the other on media plate and growing them in optimized way in pure form. Diverse metabolism found in microorganisms, demands range of media for their selection and cultivation.

In general culture media contains nutrients, growth promoting factors, vitamins, energy sources, buffer, inorganic salts, minerals, trace metals and gelling agents (for solid media).

The Culture media are classified into different types based on their nutritional values and growth supporting properties as,

1) **Minimal Media:** It contains minimum nutrients without amino acids for growth of wild type of microorganisms. For e.g., M9 minimal medium.
2) **Enriched Media:** It contains supplementary growth nutrients like blood, serum or growth factors for the growth of wide variety of organisms, including the fastidious types of bacteria's. For e.g., Blood Agar, Chocolate Agar.
3) **Transport Media:** It is basically a preserving media to minimize bacterial overgrowth from the point of collection to the laboratory for processing. For e.g., Amies Transport media with charcoal, which helps eliminate metabolic products of bacterial growth.
4) **Differential Media:** It is an indicator media used to differentiate closely related organism or group of organism growing on the same medium. It uses the metabolic characteristics of a

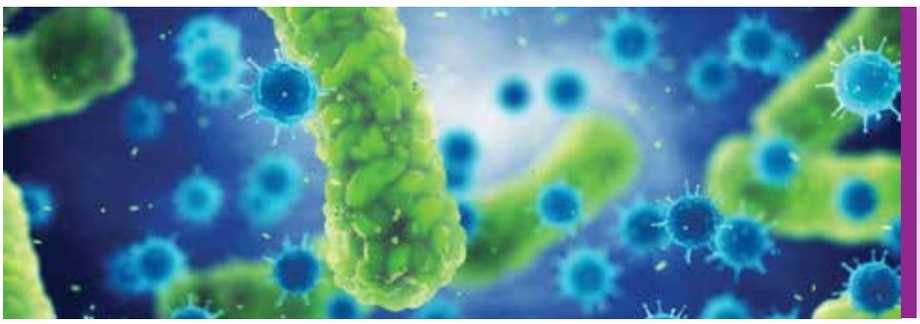
microorganism to differentiate from other microorganism, with the addition of an indicator dye or substrate.

For e.g., MacConkey Agar is a selective and differential medium in a manner in which it differentiates Lactose fermenters from non-fermenters with neutral red as an indicator dye that results in lactose fermenters to produce pink coloured colonies and colourless colonies of non-fermenters.

5) **Selective Media:** It is a type of nutritional composition suitable for the growth of only one type, species or genus of microorganism, on the basis of its specific metabolic activity. The medium is so designed that desired microbe is allowed to grow, inhibiting the other type. For e.g.,

- Generally medium with low pH is selective for the growth of Fungi, yeasts and moulds.
- Medium with high pH inhibits gram-positive eubacteria, but supports *Actinomycetes*.
- Medium with inhibitors such as specific antibiotics prevents the growth of unwanted organisms and favors desired microorganism.
- To inhibit growth of Gram-negative organisms, potassium tellurite, sodium azide is used in the culture medium.
- To inhibit the growth of Gram-positive organisms, gentian violet, bile salts, sodium deoxycholate is used the culture medium.
- To inhibit swarming of *Proteus* species agar and p-nitrophenylglycerol (PNPG) is added in the growth medium.

History & Development of microbiological growth media:



The origin of microbiology culture media can be traced back to 19th century. The key historical milestones are :

1860 — Louis Pasteur

The first to cultivate microorganisms on a growth medium, using yeast, ash, candy sugar and ammonium salts for fermentation media.

1881 — Robert Koch

He developed solid media using gelatin, this new plate technique could be used both to isolate pure cultures of bacteria.

1882 — Fannie Hesse

Suggested replacing gelatin with agar as solidifying agent.

1887 — Julius Richard Petri

Modified the flat glass plate and produced a new type of culture dish for media (Petri dish). The key design of Petri dish was the use of an overhanging lid, which was in place to keep contaminants out.

1888 Martinus Beijerinck

He developed a selective medium containing no nitrogenous compounds, to isolate the root nodule bacterium *Rhizobium*, which is capable of fixing atmospheric nitrogen. This inhibited growth of non-nitrogen fixing organisms and produced a pure culture of *Rhizobium*.

1890 Friedrich Loeffler

Developed culture broth using horse serum to cultivate *Corynebacterium diphtheria*. This formulation is still widely used today as Loeffler's medium.

1905 Alfred MacConkey

He developed selective media using bile salt to isolate lactose fermenting bacteria from faecal samples.

1923 Muller

He developed selective media using iodine and sodium thiosulphate, which react together to form tetrathionate. The selectivity of tetrathionate depends on whether or not an organism possess the enzyme tetrathionase, *Salmonella* and *Proteus* species possess the enzyme, so can grow in the presence of terathionate.

1945 Fleming, Florey and Chain

They were awarded the noble prize for the development of Penicillin, in culture media as a selective agent.

1964 Thayer-Martin

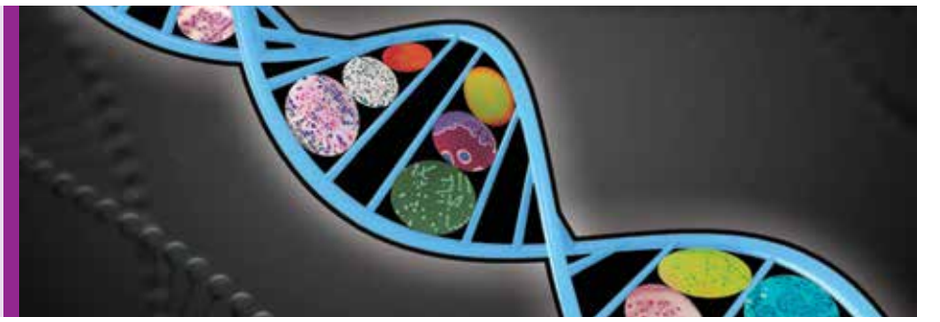
Published a formulation for *Neisseria gonorrhea* and *Neisseria meningitidis*, using a mixture of vancomycin, colistin and trimethoprim.

From the above developments, the urge of culture media for the growth of a particular type of microorganism or group of microorganisms is vividly seen. However factors such as high cost associated with the preparation of different types of culture media and stringent process controls for their manufacturing abilities makes it little challenging for their consistent availability. However to overcome this, to provide highly reproducible and consistent results HiMedia Laboratories Pvt Ltd has been manufacturing and researching on such media for past 4 decades.

HiMedia Laboratories Pvt Ltd is an established organization engaged in manufacturing and supplying an extensive range of Culture media. It provides a complete line of products in pharmaceutical, biopharmaceutical, food, dairy and water industries, veterinary, molecular biology and environmental analysis. It possesses a complete range of Chromogenic and HiVeg™ media products. It is amongst the top three brands in microbiology in the world.

https://books.google.co.in/books/about/Handbook_of_Microbiological_Media.html?id=NpbLBQAAQBAJ&printsec=frontcover&source=kp_read_button&redir_esc=y#v=onepage&q=himedia&f=false

Representative selective media available with HiMedia are as below:



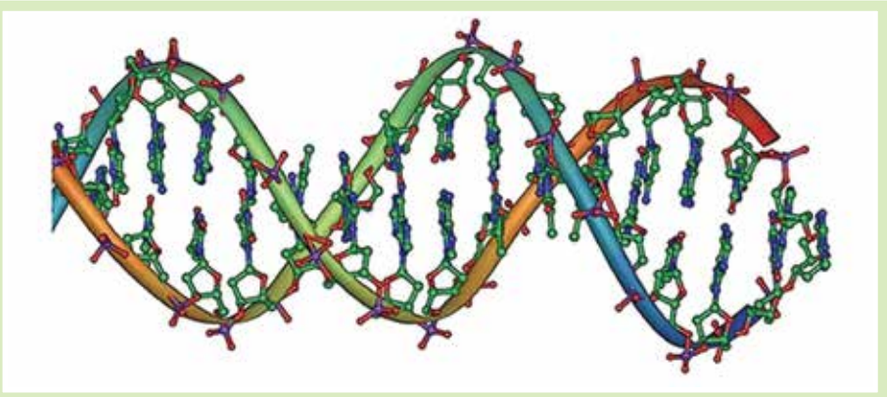
Type of Bacteria	Name of Media	Selective and Differential Agent	Mechanism of Action
Gram positive bacteria			
Staphylococci	1. Baird Parker Agar Base (M043) 2. Mannitol Salt Agar Base (M118) 3. Vogel-Johnson Agar Base (V.J. Agar)(M023)	Sodium pyruvate	Protects injured cells and helps recovery.
		Lithium chloride, potassium tellurite	Inhibit most of the contaminating microflora.
		Mannitol	Fermentable carbohydrate, which leads to acid production, detected by phenol red indicator.
Enterococci	2. Enterococcus Differential Agar Base (TITG Agar Base) (M1896)	2,3,5-Triphenyl tetrazolium chloride solution	The differentiation is based on reduction of tetrazolium, resulting in colonies with a deep red centre and a narrow white periphery of *Enterococcus faecalis*, whereas *Enterococcus faecium* produces white or pale pink coloured colonies.
		Thallium acetate	Acts as a selective inhibitory agent
Gram Negative bacteria			
Enterobacteriacae (E.coli, Klebsiella, Salmonella, Shigella)	1. MacConkey Agar w/ 0.15% Bile Salts, CV and NaCl (M081) 2. Violet Red Bile Agar (M049)	Bile Salts, crystal violet	Inhibitory to most species of gram-positive bacteria.
		Lactose	Lactose-fermenting strains grow as red or pink colonies and may be surrounded by a zone of acid precipitated bile, non-fermenting strains, such as *Shigella* and *Salmonella* are colourless,
		Neutral red	As indicator system for subsequent colour change of the dye when the pH of medium falls below 6.8
Pseudomonas	Cetrimide Agar Base (M024)	Cetrimide	Cetrimide is a quaternary ammonium salt, inhibits the growth of many microorganisms
Anaerobic bacteria			
Clostridium	Anaerobic Agar (M228)	Sodium thioglycollate and sodium formaldehyde sulphoxylate	Provide adequate anaerobiosis which is indicated by methylene blue present in the medium which yields blue colour to medium in presence of oxygen.
	Clostridium Difficile Agar Base (M836)	D-cycloserine and cefoxitin	Inhibit the growth of majority of *Enterobacteriaceae* and also *Enterococcus faecalis*, Staphylococci, gram-negative anaerobic bacilli

SIMPLICITY IN EXTRACTION LEADS TO NUCLEIC ACID REVOLUTION.

Our enthusiastic team of scientists at HiMedia work on automating the basics to simplify nucleic acid extraction thus elevating technology in BioSciences.

Ms. Vaishnavi Sadagopal
Junior Molecular Biologist

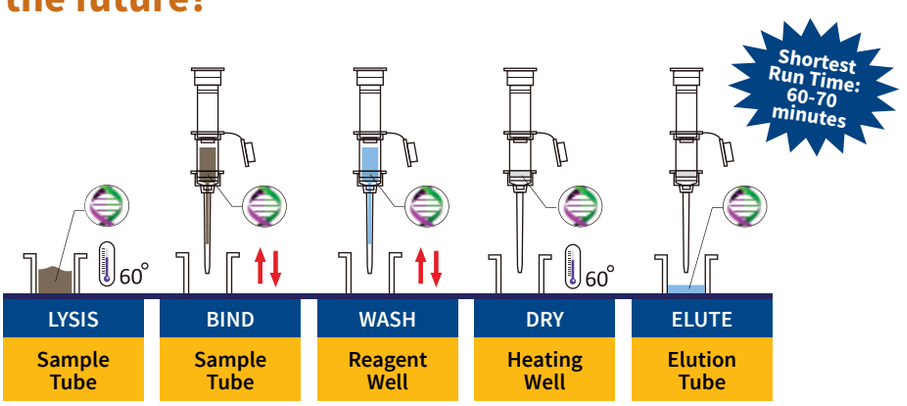
Accomplished Biotechnology Professional expertise in Molecular Biology technique. From the scientific forum of nucleic acid extraction to the audit ISO documentation, the author takes pride in multi-tasking.



Nucleic acid extraction has been constantly evolving and has remained the first step for carrying out various downstream applications used in the field of molecular biology including medical, forensic as well as basic biological sciences.

It assumes the role of the governing factor for implementation of futuristic Molecular diagnostic investigations as it has been the bottleneck for deciding the quality of DNA/RNA. Isolated DNA/RNA can be used for subsequent downstream processes, analytical or preparative purposes.

Why manual extraction isn't the best bet for the future?



Currently, many specialized manual methods such as solution based and column based protocols are used to extract DNA/RNA, which begin with conventional methods like **organic solvent extraction** to **solid phase extraction**, that uses spin column operated under centrifugal forces. The process of manual nucleic acid extraction and purification have certain limitations which include **technical expertise, reproducibility, chances of cross-contamination**. Other major drawbacks for this process can be summed up as **laborious** and **time-consuming**. Although, many modifications have been done in current protocols, a **simple, time-saving** and **efficient** extraction method is still a major challenge to obtain pure DNA/RNA with minimal cross-over contamination. To overcome these labor-intensive manual extraction methods, innovative automated extraction platforms are the need of the hour.

How Automated Nucleic Acid Extraction is the best solution for future!

In clinical and forensic laboratories, high-quality DNA and RNA are extracted from a variety of body fluids and tissues. These are then used for downstream diagnostic assays. Therefore, it is crucial to obtain purified samples in sufficient quantity, which is made possible due to the automated extraction system. The automated extraction system is designed for high-throughput sample processing which helps to simplify the isolation of nucleic acids with reproducible yields. It aims at replacing **bench top manual** processes with a **reproducible robotic system**.

How will the shift from Hands-on to Hands-free extraction of nucleic acids elevate processes in molecular biology?

1. The automated extraction system offers magnetic and spin column based purification approach. The magnetic based system uses magnetic beads which binds to complementary strands and then purify it. However, it gives lower yield and it affects purity due to **inefficient binding** to nucleic acids and **inhibitors carryover**. This makes magnetic beads based system less suitable for downstream processes like PCR and sequencing.

2. To overcome this, column based extraction platform can be used. However, the binding of nucleic acids to the silica membrane requires centrifugation, which requires all the tubes to be kept open for the robot to have access to each tube. This **non-streamline workflow** and potential **aerosolization of samples** increases the **possibility of cross-contamination**.

It's Time to Put an End to Tiresome Practices

To eliminate all these existing limitations, HiMedia has developed a **cross-contamination free, innovative, affordable** automated nucleic acid extraction system which puts an end to the usage of centrifuge. HiMedia's Automated extraction system uses innovative Novel **Super S-membrane** column based method to extract nucleic acid which gives highest purity and consistent yield from a wide range of sample types. This system has **pre-filled sealed reagents**, making it user-friendly and economical.

HiMedia's Insta NX™ Automated system uses **"Trinity Technology"**, through which the purification can be done within the **straight line cartridge without centrifugation** and **vacuum pump**. It is easy to use and allows processing of high-throughput samples, the yield and purity of extracted DNA/RNA are **similar** to manual kits. The **reproducibility** of samples along with the **graphical touchscreen interface**, as well as the **speed** and **accuracy** of the assay are high without the **risk of cross-contamination** and **carry-over contamination** Unique with a unique inbuilt **"Self-Sterilizable Module" feature**.

HiMedia's Automated Extraction Kits

- Insta NX™ Blood Genomic DNA Purification Kit
- Insta NX™ Stool DNA Purification Kit
- Insta NX™ Viral DNA Purification Kit
- Insta NX™ Urine DNA Purification Kit
- Insta NX™ Mycobacterium Tuberculosis DNA Purification Kit
- Insta NX™ Viral RNA Purification Kit
- Insta NX™ Food Pathogen DNA Purification Kit (Salmonella) [Provided with Culture Media]
- Insta NX™ Food DNA Purification Kit
- Insta NX™ Water DNA Purification Kit
- Insta NX™ Tissue DNA Purification Kit
- Insta NX™ Forensic Multi sample DNA Purification Kit
- Insta NX™ Bone DNA Purification Kit
- Insta NX™ Plant Genomic DNA Purification Kit
- Insta NX™ Superplant DNA Purification Kit
- Insta NX™ Fungal DNA Purification Kit
- Insta NX™ Soil DNA Purification Kit
- Insta NX™ Blood RNA Purification Kit
- Insta NX™ Bacterial Genomic DNA Purification Kit
- Insta NX™ Cell Genomic DNA Purification Kit
- Insta NX™ Frozen Blood DNA Purification Kit
- Insta NX™ Food Pathogen DNA Purification Kit (Without Culture Media)

CULTIVATING A CULTURE OF HYDROPONICS. CULTIVATING A PLANT KINGDOM.

Discovering the nuances of Soilless Farming

Hello Hydroponics, Let's get to know you!

Dr. Rekha Patil Bandekar, Ph.D.
Scientific Co-ordinator

Accomplished Biotechnology Professional with 14 years of experience in Academics and Research in Bioscience/Biotechnology/Hydroponics besides Scientific communication/Writing. Research area is toxicity studies of plants on organs of rats. Completed 3 Projects, and published 5 papers in national and international journals. Guided 15 graduate and post-graduate Biotech students for research.

M-Tech Biotechnologist with 8.5 years dedicated experience in Hydroponics and currently working at HiMedia as Hydroponics and Plant Tissue Culture product specialist. He has done several projects in hydroponics from lab scale to commercial large scale at domestic and international level.

Mr. Manish Ravindra Raut
Product Specialist : Hydroponics and Plant tissue culture

The term "hydroponics" literally means "water working", that is cultivating terrestrial plants without soil, by exposing their roots directly to the mineral nutrient solutions in water. Sometimes the roots may be supported by an inert medium, such as perlite or gravel.

Reasons that makes hydroponics the need of the hour

1. **Human population:** It is growing colossally and is foretold to expand to 9.5 billion in next 40 years. It means food demand is going to rise massively in coming time. In addition to this, in order to accommodate the growing population, extensive deforestation is being done; agricultural plots are being used for urbanization/ concretization & shelters etc., making the matters worse.
2. **Unsustainable agricultural practices are the greatest immediate threat:** Erroneous usage of pesticides, chemical fertilizers, plant hormones, water wastage due to wrong irrigation methods, tillage, stubble burning, planting without rotation & inappropriate animal wastes, are some of the wrong practices leading to innumerable types of pollutions and wastage of resources.
3. **Environment pollution:** Due to industrial revolution and Human activities huge amount of industrial effluents, domestic sewage, organic and inorganic wastes is disposed into the environment. From

Key historical milestones in Hydroponics

Sr. No.	Year	Scientists	Contribution
1.	1627	Francis Bacon	The very first book, 'Sylva Sylvarum' on growing terrestrial plants without soil was published
2.	1842	Many other scientists contributed	List of nine essential Macro and Micro nutrient elements for plant growth was compiled and declared
3.	1859-75	Julius Von Sachs and Wilhelm Knop	Contribution to the advancement in soil-less cultivation technique
4.	1929	Dr. William Frederick Gericke	a. Coined the term 'Hydroponics' in 1937 meaning 'Geoponica', in Neologism that means substituting Geo (earth) with Hydro (water). b. Grew tomato vines 25 feet high in his backyard in nutrient water solution

Dr. William Frederick Gericke (1882- 1970)
https://www.youtube.com/watch?v=dEV3ASZz9R8#action=share

this many toxic elements like heavy metals, toxicants are getting mixed in agricultural soil. These toxic elements are eventually getting entry into our food chain leading to dangerous ailments like cancer. Altogether, this is causing desertification, erosion & degradation of soil, affecting water & air quality, leading to drastic climate change, which in turn is deteriorating food/crop quality and eventually affecting the health of the humans and livestock. Country's crop production is entirely dependent on Monsoon. Lower or higher, deviations in it from mean local rainfall are negatively associated with successful agricultural output. This uncertainity leads to famine or drought situation. The creative application of hydroponics at right time may soothen this situation and add some certainity. Agriculture has shown a stable average per annum growth for some crops in recent years which is mainly due to the green revolution, improved transportation, and advancement in agriculture knowledge.

Still, considering increasing population the yield must increase by 40 to 60% Climatic uncertainty, wrong practices, increasing pests, post-harvest losses due to poor infrastructure and unorganized retailing and poor storage facilities destroy the crops causing hefty losses to the farmers. Moreover, the Indian agri-market is captured and controlled by greedy middlemen leading to distress sale of produce which eventually lessens farmer's income. Division of land between the family members by the virtue of inheritance has again added negative impact, as the use of agriculture instruments or techniques like Irrigation and mechanized farming is not possible in fragmented land in turn leading to the highest food losses.

At HiMedia, we want to solve this problem by bringing up one stop solution, a technology for the farmers which will bring clean Green revolution 2.0. With this vision HiMedia® ventured into Hydroponics in 2016 under the wing higronics®. The higronics® platform is a One Point Solution (OPS) for all scales of hydroponics applications. To accomplish this vision, we established one of its kind R&D facilities in Mumbai. 'higronics®' is a mission. It is an approach. It is about sustainability, social responsibility, and most importantly, bringing about a much-needed change for the farmers, country and for the benefit of all. Our philosophy is to build around the fundamentals of social upliftment through innovation and education.

References:
https://www.findagrave.com/memorial/132114553/william-f.-gericke

Positives of Hydroponics

- No soil needed
- Make better use of space and location
- Hydroponics is water-saving-technology and only utilizes 5-10% of water compared to conventional practices.
- Climate control: Optimum pH and Optimum temperature control the nutrient solution.
- Effective nutrient control giving better stable growth rate, better quality and higher yields.
- Nutrient solutions are plant-specific. They provide vigorous & healthy growth
- No soil hence no weeds, thus no use of weedicides.
- Fewer pests & plant diseases, hence no use of pesticides and insecticides.
- No use of chemical fertilizers hence environment-friendly in all sense.
- Labour and time savers
- Accurate Control of the whole system-Low Maintenance hence economically viable.
- Easy to transplant.
- Able to grow crops all year round.
- Hydroponics is a stress-relieving hobby too. Pluck and eat type.

HIMEDIA "MAKES LIFE PRECIOUS" WITH UNIQUE MARKETING STRATEGIES

Marketing & Sales: The Strength of HiMedia Labs

Mr. Vijay Joshi
Assistant Manager – Export

Vijay M. Joshi is M.B.A. in Marketing Management and has done Advanced Computer Programming and Desktop publishing. He is working as an Assistant Manager, Export section in HiMedia since 24 years. Beside strong experience in marketing, he is also writing articles on various topics since 15 years.

Chanakya(1.https://www.webchanakya.com/11-webchanakya-niti-inspired-chanakyas-arthashastra/, 2.https://www.soulveda.com/happiness/chanakyas-three-ways-to-become-successful/), the ancient Indian teacher, philosopher, economist, jurist and royal advisor of the 4th Century BC; explained three marketing secretes of a Successful business. As per Chanakya *neeti*, Success is by Counsel, by Might, and by Energy. While the first two are respectively dependent on advisors and authority, the third is about will-power, enthusiasm and passion, HiMedia has been following its marketing with power and passion, established leadership status in India and spread across the globe. HiMedia was founded by Dr. G. M. Warke, Mr. V. M. Warke and Mrs. Saroj G. Warke 4 decades ago in pursuit of the "Make in India" Dream, to provide indigenous, cost effective and quality culture media that are equally trustworthy alternative to the highly expensive, imported culture media then.

Dr. G. M. Warke along with his brother, Mr. V. M. Warke and an energetic team have always been on their toes for finding avenues to reach out to a global customer base expanding the company's distribution and technical service world-wide. Moreover the gems of the second generation, Dr. Vishal G. Warke, Dr. Rahul G. Warke and Dr. Rajas V. Warke, specialized in their respective areas, are also taking care of the company's marketing & sales strategies and implementing them at the domestic and international level. Due to their tremendous efforts and innovative ideas, they have taken the company's success to the next level. The marketing team directed by the founders well understands the difference between sales and marketing. They know that sales increase the revenue while marketing strategies increase the recall value of the products by conveying unique strength of the products. Marketing eventually increases the sales. Producing unique, innovative, excellent quality of products, customized products, updating them time to time, after sales services, Niche marketing, Trade show marketing, huge distribution network are few marketing strengths of HiMedia. Due to such stupendous efforts of the entire team, today, HiMedia is the leading BioSciences Company of the country, having more than 500 distributors across India and abroad, which contribute to its formidable marketing network and reach. Products are delivered to clients in minimum time with zero delivery issues which is possible due to extensive distribution network and effective logistic.

According to Ingman (1992), (http://www.su.lt/bylos/mokslo_leidiniai/ekonomika/09_01_14/isoraite.pdf) strategic marketing is one of the functional strategy that constitute an overall business strategy. Infact, the impact of marketing strategy is very high in the over all business plan. Being a strong follower of this, in order to accomplish set objectives and to maintain competitive advantage, marketing strategy

is always improved by constantly reviewing the process, by investigating the consumer's need and its trend, by checking competitor's activities and evaluating effectiveness of the competitor's brand.

strategies to get best results

HiMedia believes in marketing essentials that are,

1. **Product/consumer's demand** : It is based on what products are demanded by consumers, its innovation and periodical advancement to its next generation.
2. **Price** : We offer the best price to buy the product.
3. **Positioning of product** : best way to communicate product's features to the target customers based on customer needs, competitive pressures, and available communication channels/options.
4. **Distribution** : the most optimal distribution channels
5. **Promotion** : to increase awareness, create interest, generate sales or create brand loyalty
6. **Monitoring** : what support measures can give the best results
7. **Services** : services provided throughout the purchase processes and after sales
8. **Evaluation** : Periodical Evaluation of the applied

Understanding the needs of the market, innovating various products, providing customized products which are as per customer's requirement, providing cost effective solutions/services consistently, remembering old clients while making new ones, and addressing the client's problem promptly are keys to successful marketing. That is the reason our first overseas client in Japan who started buying HiMedia products

in 1978, still continues unabated. With these unique strategies and dedicated sales team, we have been serving **more than 150 countries** including U.S.A., China, Japan, European Countries, Middle East Countries, Asian Countries, African Countries, Russia & CIS Countries, North-Central-South American Countries including Caribbean Countries and Australia & New Zealand etc. **Moreover, HiMedia has direct presence in the U.S.A. and Europe (Germany) for providing services and for the rapid delivery of products.**

Considering the **'innovation and upgradation of products'** as the backbone of a successful industry, superior technology have always been adapted by our team. For example,

1. Chromogenic media and highly cost-effective diagnostic aids for tuberculosis are the efforts in response to market needs.
2. The mad cow disease posed new challenges in the world and fouled many a microbiological testing tools due to animal peptones which may be contaminated with TSE* (transmissible spongiform encephalopathy)/ BSE** (Bovine Spongiform Encephalopathy) agents. This concern fired the imagination of HiMedia's research team and that resulted into comprehensive range of vegetable peptones (HiVeg™) which are 100% animal free. (https://books.google.co.in/books/about/Handbook_of_Microbiological_Media_Fourth.html?id=Pj5FAQAAIAAJ)
3. Further, in response to client's needs, we also developed media in Granulated Form, Chemically Defined Media (HiCynth™) and Harmonized media.

Today HiMedia's product list contains a wide range of products for majority applied fields of Microbiology, Biotechnology, Animal Tissue Culture, Plant Tissue Culture, Molecular Biology to supporting the customer's need. Our extensive product range is at doorsteps of our customers, which includes:

Ready Prepared Media (RPM)	Dehydrated Culture Media and Supplements (DCM)	Culture Media Bases	Antimicrobial Susceptibility Systems	Bacteriological Differentiation Aids
Animal Cell Culture (ATC)	Plant Tissue Culture (PTC)	Molecular Biology Kits, Reagents, Chemicals and Growth Media (MB)	Laboratory Chemicals & BioChemicals	Laboratory Aids/ Accessories/Instruments

HiMedia also provide customized products as per the unique requirements of the customers in terms of media, formulations, packaging, labeling etc.

Another success secret of HiMedia is our quality Policy. "Quality First" is the motto of HiMedia and we are firmly committed to design, develop, manufacture and provide indigenous, novel, excellent quality products and technical service worldwide. We have obtained necessary Quality Certifications such as ISO 9001:2015, ISO 13485:2012, WHO-GMP etc.

HiMedia regularly participates in National and International Exhibitions and trade shows :

- to update our customers with our product range
- to give knowledge and training about our products
- to understand their needs
- to get the feedbacks to serve customers in a better way

We also assure to provide world class quality products :

- with very competitive price
- with fastest delivery
- with good quality technical service after the sale

National Events

SME

2018, Manufacturers and Exporters Summit, Hotel Sofitel BKC, Mumbai

BioMet

2018 @ VIT, Vellore, Tamil Nadu

Krushithon
2018,
Nasik

Warkem-Our Associate Company

International Events

Kenya Laborum
2018, Nairobi,
Kenya


ICMR
Conference
2018,
Pune
MEDI
Life is Preci


MEDICA
2018, Dusseldorf
Exhibition Center,
Düsseldorf,
Germany
HIMEDIA
For life is precious

ICAR - Central Institute of Fisheries Technology

Licensing of Technology
CIFTest

Rapid Detection Kits for finding adulterants in fresh fish

4th July 2018

From Left to Right: Dr.George Ninan, Sr.Scientist (ICAR-CIFT-Cochin); Dr.Ravishankar C.N, Director (ICAR-CIFT-Cochin); Mr.V.M.Warke, Co-founder & Director (HiMedia); and Dr.Zynudheen.A.A, Sr.Scientist (ICAR-CIFT-Cochin).

We are glad to share that HiMedia is honoured with **"Pride of Maharashtra Award"** under the category of **"Best Company of the Year Award"** for 2017 by **Maharashtra Industrial** and **Economic Development Association** (MIEDA).

"Best Company of The Year Award" for 2017

HIMEDIA®
For Life is Precious
Striving for Excellence

MAHARASHTRA INDUSTRIAL AND
ECONOMIC DEVELOPMENT ASSOCIATION

27th August, 2018

Dr G M Warke
Chairman & Managing Director
Himedia Laboratories Pvt Ltd
Mumbai

Dear Dr Warke,

Sub: Selection for "PRIDE OF MAHARASHTRA AWARDS"

Maharashtra Industrial and Economic Development Association (MIEDA) is happy to inform you that, we have selected your nomination for "Pride of Maharashtra Award" under the category of "Best Company of The Year Award" for 2017.

Pride of Maharashtra Award is unique recognition to individuals, enterprises, SMEs and Institutions for their exemplary achievements & remarkable services to the society, industry, economic growth, empowerment of Entrepreneurship, start-ups, philanthropic work and efforts for State and Nation building.

We would like to request you to send your acceptance at the earliest. We will inform you the date of award function and agenda of the event in due course.

We look forward to receiving your confirmation at the earliest.

With Regards,

Chandrakant Salunkhe
Founder & President
+91-9820088377

Tel:. +91 – 22 – 6150 9800 / 6667 4444 | Fax: 2825 0414 / 2927 1750 | Email: mieda@vsnl.net | Website www.mieda.in
Registered & Head Office: 4 Upper Ground Floor, Samruddhi Venture Park, Marol MIDC Industrial Estate, Andheri (E), Mumbai - 400 093
ACTIVITIES: INDUSTRIAL & INFRASTRUCTURE DEVELOPMENT | INVESTMENT & EXPORT PROMOTION | RESEARCH | CONSULTANCY

Exhibitions and Conferences Upcoming Events

Feb 04

04 Feb 2019 - 07 Feb 2019

MEDLAB - 2019, DUBAI

Venue : Dubai International Convention & Exhibition Centre, Dubai, UAE

Mar 12

12 Mar 2019 - 14 Mar 2019

ARAB LAB - 2019, DUBAI

Venue : Dubai International Convention and Exhibition Centre (DICEC), Dubai, UAE

HiMedia Europe
Tel : +49 6251 989 24-26 | Fax : +49 6251 989 24-27 | Email : infoeu@himedialabs.com

Corporate Office
A-516, Swastik Disha Business Park, Via Vadhani Indl Est, LBS Marg, Mumbai - 400 086, India.
Tel : +91-22-6147 1919 / 2500 3747 | Fax : +91-22-6147 1920 / 2500 5764
Web : www.himedialabs.com | Email : info@himedialabs.com

Literature Code: N-TL550_02/HiMedia Newsletter/1218