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Probiotic Association of India

From the Chief Editor's Desk**Dear Members of PAi family****Our Greetings & Warm Welcome**

It gives us immense pleasure to launch the next issue of PAi newsletter this month. The launch of this new issue of Probiotic Newsletter was preceded by the organization of 3rd Biennial PAi Conference and International Symposium with Theme Title "Stress, Gut Microbiome and Probiotics" in association with NISER at NISER, Bhubaneswar from 11th March to 13th March, 2016. Hence, like previous years, this special issue of Probiotic Newsletter has been specifically dedicated to the coverage of the Scientific activities and technical programme of the 3rd Biennial PAi Conference by highlighting the major issues that emerged from the talks delivered by various key note speakers and presentations from the young Researchers.



Hope, many of the members of PAi family who could not make it possible to attend this conference, will find the content of the proceedings of the conference interesting and useful. They will update their knowledge on the role of stress in causing various medical conditions especially life-style inflammatory, gastro- intestinal diseases affecting gut and gut brain axis and their management through probiotic interventions by following metagenomic approaches and next generation sequencing techniques. Finally, the key recommendations that emerged from the outcome of the conference from overall perspective will also figure in this newsletter for taking further necessary action to address the major problems faced by the industries and other stake holders in the country and globally with regard to regulation of safety and efficacy of probiotics and their formulations at the Govt. level to sensitize the target human population and the consumers.

Wish you all a wonderful healthy and happy life by making probiotic foods an integral part of your daily diet so that eventually India emerges stronger with lot of productivity to take the nation to new heights across the world!

(SUNITA GROVER)
Chief Editor



Conference Highlights

The 3rd Biennial PAi Conference & International Symposium with the theme title “Stress, Microbiome & Probiotics” was jointly organized by Probiotic Association of India (PAi) and National Institute of Science Education and Research (NISER), Bhubaneswar from March 11-13, 2016 at National Institute of Science Education & Research (NISER), Bhubaneswar, Odisha, India. The conference was attended by around 150 delegates comprising of faculty and students from academia, universities, research organizations, medical professionals, clinicians, nutritionists, dieticians and representatives of local and multinational food/dairy and pharma industry from different parts of India and the major global players extensively involved in probiotic research, gut microbiota and product development besides marketing. It would not be out of context to mention here that it was the first time when PAi conference was held outside Delhi just to expand its scope by reaching out the other far off places in the country to popularize the probiotic concept and promote Research and development in different domains of probiotics as a science from human health perspective. Besides this, it was intended to sensitize the local stake holders by creating awareness amongst the target population on the immense health promoting and therapeutic potentials of probiotics and encouraging them to make probiotic formulations as an integral part of their diet to derive their maximal health benefits for management of some chronic GI diseases.

The conference was formally inaugurated by the chief guest Dr. V.M. Katoch, Chief patron, PAi and Ex-Secretary, DHR and DG, ICMR. Dr. Katoch in his inaugural speech highlighted the role of probiotics as adjunct therapy. He called upon the registered delegates and other attendees that in order to make scientific impact in this area, we must develop partnerships between Clinicians, Pathologists, Epidemiologists and Industries. Dr. Katoch was quite optimistic about the high quality deliberations to be made during the conference and hoped that this conference/symposium will help in introspecting and positioning of India as an effective partner both as contributor and beneficiary. Dr. N.K. Ganguly, Patron, PAi, Former DG, ICMR, and presently distinguished Biotechnologist (DBT) also graced the occasion with his benign presence as the Guest of Honor. He also addressed the gathering and emphasized the need to focus sincere efforts to encourage students and young faculty to understand the fundamental health benefits of probiotics on gut microbiota and the correlation with stress of modern days in human life due to change in the life style.

Conference Highlights

He further added that the conference covering vast areas would certainly boost the young researchers in that direction by exploring new advancements in science and new approaches to unveil the complexities and morbidities for mitigation of human sufferings from the diseases taking the leads from bench to bedside. Prof. V. Chandrasekhar, Director, NISER found the theme of the symposium quite relevant from the perspective of shift in the life style of present generation where stress is carried from work place to home and vice versa. As a result of that, perturbation of homeostasis in the gut microbiota is a common phenomenon which may eventually lead to physiological disorders. Under these conditions, probiotic interventions can turn out to be an effective dietary based strategy to manage stress induced diseases in the GI system. During the inauguration, the Conference souvenir was released by the distinguished guests. The inaugural session was followed by various plenary and technical sessions. The Conference had a very in-depth scientific program spread over three plenary sessions with four technical sessions, which covered almost all the emerging domains of probiotic applications as per the conference theme .



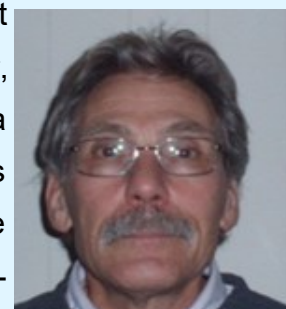
Conference Highlights

The key note address on “Probiotics: Past, Present and Future” was delivered by Dr. S. K. Dash, Chairman and Founder of UAS Laboratories, LLC, USA. The session was chaired by Dr. V.M. Katoch. Dr. Dash narrated his journey about what he did in the field of probiotics for the last 37 years. He stated that the public awareness of probiotics increased from mere five percent ten years ago to 85 percent today and the probiotic market segment has grown to 32 billion dollars from mere 10 million dollars twenty years ago. The key note address was followed by the first Plenary Session that was on the theme of “Probiotics and vaccines”, chaired by Dr. S.K. Dash. Dr. N. K. Ganguly, who as the plenary key note speaker advocated the importance of probiotics as adjuvants for mucosal as well as parentally administered vaccines. He emphasized on the use of *Lactobacillus* as a versatile, cost effective and easily deliverable vaccine especially for low resource countries and potential candidates for prevention of diseases like HIV, malaria and pneumococcal infections. Mechanisms involved in immune stimulation by Lactic Acid Bacteria were discussed explicitly; most importantly, how *Lactobacillus* are being used as a versatile delivery vehicle for developing new vaccines.



The first technical session titled “Metagenomics of Gut Microbiota/Microbiome, Probiotic/prebiotic interventions” was chaired by Dr. Georgi Nikolov Aleksandrov, Head of Emergency Surgical Team, Military Medical Academy, Sofia, Bulgaria and four invited talks were delivered.

In the first presentation on “Regional variation in the gut microbiome: It’s not all the same in the end”, Dr. Philip Griebel, Professor & Canada Research Chair, School of Public Health & VIDO-INTERVAC, University of Saskatchewan, Canada spoke about how critical was the bacterial colonization in the gastrointestinal tracts of the newborn while coming out from sterile uterus to the external environment. He described the early pioneer species and their distribution throughout the gastrointestinal tract. He confirmed the age-dependent variations in microbiome abundance and diversity throughout the GIT with pyro sequencing and phylogenetic analysis.



Dr. Rama Chaudhry, Professor at Department of Microbiology, AIIMS, New Delhi, India was the next speaker in this technical session and talked about how does human gut microbial diversity play an important role to regulate health and disease. She briefed the delegates about the alteration in number of Bacteroidetes and Firmicutes in healthy and diseased persons which could be used as a microbial biomarker.

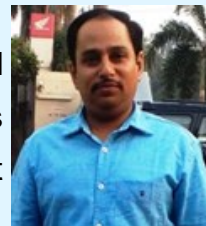




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Conference Highlights

The next speaker Dr. Kanthi Kiran Kondepudi, National Agri-Food Biotechnology Institute, Department of Biotechnology, Punjab, India focused his talk on the mitigation of metabolic and mental stress through modulation of gut microbiota using a co-biotic preparation. In the last presentation on “Nutritional programming of porcine gut microbiota: A metagenomic approach”, Aditya Upadrasta from Unique Biotech Limited, Hyderabad, India highlighted the positive influence of dietary supplementation with live cider dietary yeast on the microbial diversity of the pig distal gut and its effect on animal growth and gut microbiota.



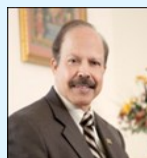
The post lunch session of day one of the conference was on oral presentations by ten short listed young researchers namely R. Jayabalan, National Institute of Technology Rourkela; Madhavi G, National Institute of Nutrition (ICMR), Hyderabad; Mothwal U, ICAR-National Dairy Research Institute, Karnal; Biswaranjan Pradhan, National Institute of Science Education and Research, Bhubaneswar; Rashmi H Mallappa, ICAR-National Dairy Research Institute, NDRI, Karnal; Nidhi Jain, The Maharaja Sayajirao University of Baroda; Himanshi Solanki, ICAR-National Dairy Research Institute, Karnal; Anuj Sharma, Panjab University, Chandigarh; Swati Parnami, The Maharaja Sayajirao University of Baroda and Choudhary R, ICAR-National Dairy Research Institute, Karnal. The session was chaired by Dr. Philip Griebel. The overall quality of the presentations made by the ten young researchers was quite impressive and highly competitive for selecting the three best young speakers for the young researchers awards by the selection committee that included Dr.S.K.Dash, Dr.Sanjay Patole, Dr.Phillip Griebel and Dr. Daniela Petrova Peneva .

The deliberations continued on the second day also and started with a Special Lecture by Dr. B. Sesikeran, Former Director, National Institute of Nutrition, Hyderabad, India on “Probiotics-Transitioning from Guidelines to Regulations in India” where the guidelines regarding probiotics usage was discussed explicitly. Dr. V K Batish chaired this special lecture. Thereafter, panel Discussion was held, where Dr. B. Sesikeran acted as Moderator. In panel discussion, government institutions and private industries were on the same dais to discuss several issues, notably, application of probiotics in daily life. It was a very interactive session wherein panelists touched upon very important issues related to regulations in India and the status of probiotics products. Thereafter, poster session took place, wherein 16 posters were displayed. Dr. Rama Chaudhry acted as Chairman for this session.



Conference Highlights

The second Plenary Session, on the theme of “Probiotics for preterm neonates – Current evidence and controversies” was chaired by Dr. S. K. Dash, Founder of UAS Laboratories, USA and addressed by Dr. Sanjay Patole as the key note speaker. He discussed about Necrotizing entero-colitis, a deadly disease primarily seen in premature infants and the effect of probiotics in diminishing the risk of inflammatory conditions related to necrotizing entero-colitis and death in preterms with very low birth weight neonates.



The second Technical Session was on “Stress, Neurological disorders and Gut Microbiome”, which was chaired by Dr. Muthuswamy Balasubramanyam, Dean of Research Studies & Senior Scientist at the Madras Diabetes Research Foundation (MDRF), Chennai, India. There were two invited speakers in this session.



In first talk, Dr. Jaishree Paul, Research Scientist, School of Life Sciences, New Delhi threw light on the topic “Bacterial dysbiosis: a key factor in Inflammatory Bowel Disease”. She informed about how decline of SCFAs (short chain fatty acids) like acetate, butyrate further leads to imbalance in gut microbiota in Ulcerative Colitis (UC) patients. She also advocated that reversion of the decreased level of few targeted bacteria to normal level occurs during remission stage of the disease.



The second speaker, Dr. Santosh Kumar Tiwari Assistant Professor, Department of Genetics, M.D. University, Rohtak delivered a talk on “Probiotic potential of bacteriocin-producing *Enterococcus hirae* strain LD3 isolated from batter of Dosa” where he explicitly mentioned the protocol how he isolated and identified a bacterial strain which can be used as a food bio-preservative and an alternative to clinical antibiotics.



The third and last Technical Session of the day was on “Stress and Ageing: Can probiotics prolong life?” This session was chaired by Dr. Philip Griebel and two invited talks were delivered. In first Dr. Osamu Chonan, D.G. Yakult Central Institute, Japan elucidated about the beneficial effect of long-term consumption of probiotic *Lactobacillus casei* strain Shirota (LcS) on healthy human population for ageing.



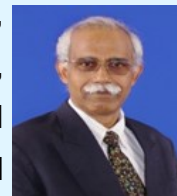
As a second speaker, Dr. Georgi Nikolov Aleksandrov emphasized on dose and time dependent use of probiotic formulae containing different strains of *Lactobacillus bulgaricus* for improvement of liver cell function and vaginal lactobacilli microbiota. A new therapeutic use of this probiotic formula in combination with plant extracts or oils was found to be more effective and led to significantly more efficient recovery of the liver functions, vaginal flora and also overcame the food allergy symptoms under clinical practice.



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On day three of the conference, the fourth technical session on "Microbiome, Probiotics and Physiology" was chaired by Dr. Sanjay Patole. As the first speaker, Dr. S.P. Singh, Professor and Head of Gastroenterology, S.C.B Medical College, Cuttack, India, created an impact and awareness regarding NAFLD in the Indian male population and established a relation between NAFLD and gut microbiome dysbiosis by correlational studies. As the second speaker, Dr. M. Balasubramanyam, Dean of Research Studies & Senior Scientist Madras, Diabetes Research Foundation, Chennai deliberated at length highlighting the beneficial effect of probiotics and prebiotics for prevention as well as treatment benefits by manipulation of gut microbiome shifts for diabetic and other related diseases.



In next talk Dr. Bhabatosh Das, Assistant Professor, Translational Health Science and Technology Institute, Faridabad, deliberated on antimicrobial resistance patterns of enteric pathogens which potentially threatens therapeutic efficacy of several drugs routinely used against these pathogen. He discussed thoroughly about the preferable drugs which not only act against enteric infections but also have a mechanism by which antibiotic resistance traits allocate among closely or distantly related bacterial species. He further elaborated their genomic perspective leading to huge future prospects.



The last speaker, Dr. Jai Kaushik, Principal Scientist, Animal Biotechnology, ICAR-National Dairy Research Institute, Karnal, India, talked about exploring the potential of probiotic surface proteins as barriers to pathogens.



The last Plenary session titled "microRNAs Expression during early gastrointestinal tract development: A mechanism for host-microbiome interactions" was chaired by Dr. Rama Chaudhry and one invited talk was delivered. In this session, Dr. Philip Griebel Professor, University of Saskatchewan, Saskatoon, Canada touched upon a recent topic in which he revealed the role of miRNA in regulating diverse immune functions, including chemokine signaling, Toll-like receptor signaling, T- and B-cell receptor signaling, and antigen presentation. He further elucidated how modulation of miRNA expression influences development of the gastrointestinal tract early microbiome. Finally, in the end, Dr. Sunita Grover, Head, Dairy Microbiology Division, ICAR-National Dairy Research Institute, Karnal summed up the proceedings of three day deliberations.



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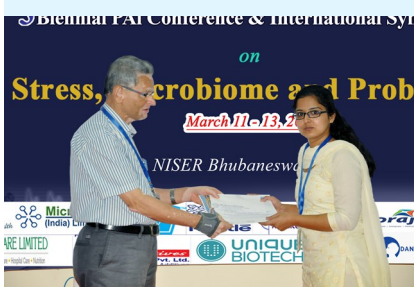
Conference Highlights

The General Body Meeting of PAi was held at the conclusion of the conference wherein Dr. Sunita Grover briefed about the accomplishments and future activities of PAi. Award ceremony was held wherein young researchers and poster awardees were given certificates and awards.

Awardees

Young investigators awardees were :

Miss Urvashi Mothwal accentuated the importance of recombinant PepL during her presentation on “PepL of *L. rhamnosus* GG which is a cobalt dependent highly specific leucyl amino-peptidase”. It was shown that Leucyl amino-peptidases are Co^{2+} dependent exo-peptidase, sensitive to chelating agents and its specificity to leucine as a substrate and could be specifically used in peptide sequencing or production of designer peptides.



Second awardee Miss Ritu Choudhary highlighted the prominent effect of probiotic surface layer protein (Slps) and talked about the inhibition of ETEC adhesion to the human intestinal cells by Slps which modulate innate immune response of mice immune cells. These results showed that Slps could act as potential candidates for the development of prophylactic drugs for the prevention of gastrointestinal diseases, which are initiated by adhesion of

pathogen to host gut.

Madhavi G, the third awardee of the above-mentioned category presented her work in which the detailed steps of identification and isolation of Bifidobacteria from Human Breast milk of Indian women were mentioned.



Poster awardees were :

- Dharendra Pratap Singh
- Tej Bahadur



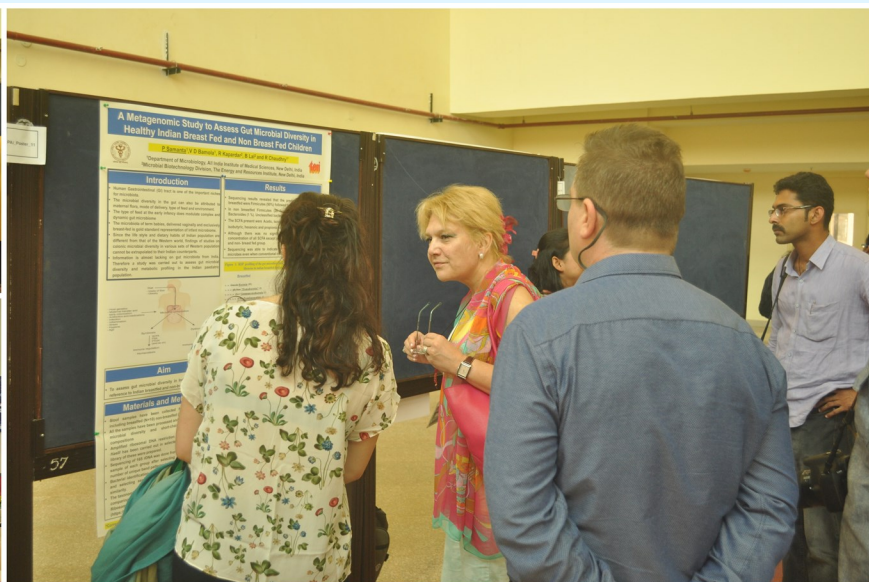


Recommendations

1. PAi should develop ties with learned societies such as the Indian Academy of Pediatrics, Indian Academy of Gastroenterology/Microbiology, National Neonatal Forum (NNF) etc. PAi can invite the members of these academies (and their state and regional chapter members) to join PAi, and even NISER because NISER is for science, education and research, the very fundamentals on which medical practice/prevention /management is based.
2. PAi should contact ambassadors from various strata of the wider community (including celebrities committed to social work) to raise its profile. These ambassadors can help in an annual fund raiser in different states of the country. Posters, short films, documentaries are the most powerful ways to reach the masses, especially in our country where the silver screen shadows even the reality. Volunteers with a track record or proper connections can help in this area.
3. PAi can develop a strategy (with the help of volunteer 'communication' experts) for reaching every common man, woman, and family in the country, to promote its cause, and commitment. Those willing to donate can 'sponsor' such activities.
4. Lack of access to high/drug quality safe and clinically effective probiotic strains/products is one of the barriers for implementing probiotics for routine use and/or research, especially in the developing nations. Probiotic Association of India (PAi) and their collaborators should focus on developing indigenous probiotic strains/products of high quality for research and/or routine use for preterm VLBW infants in India.
5. PAi needs to develop strong ties with clinicians from various faculties of medical field including neurology, neonatology, general pediatrics, adult medicine and gastroenterology.
6. PAi and related organizations need to develop/strengthen contact with translational research experts for effectively bridging the gap between the bench and bedside. It is important for PAi to reach other stakeholders such as the ICMR, Indian Academy of Pediatrics for high quality clinical research. The goal is to be self-sufficient with regard to probiotic strains for clinical research/use. Developing strategies to reach the general community is also important.
7. Given the burden of death and disease in high-risk neonates, and the United Nation's millennium developmental goal (MDG-4), and the United Nation Secretary-General's Global Strategy for Women's and Children's Health (2010) and its accompanying 'Every Woman, Every Child initiative, Every Newborn Action plan' (ENAP), it is important to develop probiotics as a cost-effective simple strategy to reduce the mortality and morbidity associated with prematurity in India.

Recommendations

8. There is a need for development of a Centre of Excellence in Probiotics and Gut Microbiota in India to pursue quality research.
9. National Culture Collection Centre of probiotics should be developed so that strains can be shared for research purpose.
10. *In-vitro* and *in-vivo* animal models need to be developed to study mechanism of action of probiotics.
11. Bio-markers should be developed to assess the biological effects of probiotics.
12. Metagenomic and metabolomics studies should be taken up on a wider platform.
13. Dose-response studies for efficacy of probiotics should be conducted.
14. Safety of developed probiotic product should be assessed through clinical trials before being launched in the market
15. Quick action from the regulatory agencies of India is essential. PAi should take initiative in this regard by regular communication with the regulatory authorities like FSSAI to launch new probiotic formulations in the market for the benefit .





Proceedings of the General Body Meeting

Proceedings of the General Body Meeting (GBM) of Probiotic Association of India (PAi) held on March 13, 2016 after the conclusion of 3rd Biennial PAi conference and International Symposium on 'Stress, Gut Microbiome and Probiotics' at NISER, Bhubnaeswer

GBM of PAi was chaired by Dr. V.K. Batish, Secretary, PAi since Dr.A.K.Srivastava, President, PAi could not attend the conference due to certain official commitments at the Institute. At the outset, Dr. Batish welcomed all the members of PAi present in the conference hall and thanked them for the successful conduct of the 3rd Biennial PAi conference and International Symposium on 'Stress, Gut Microbiome and Probiotics' by actively participating in discussions. He said that the key issues raised during the deliberations from different scientific, technical sessions will be taken care of. To begin with he invited Dr. Sunita Grover, Treasurer, PAi to present the status of audited accounts of PAi and other general issues to be discussed.

Dr. Grover presented achievements of PAi since its inception and then the audited statement of the overall expenditure of PAi bank accounts and apprised the members with the current status of the balance amount credit in the SBOP saving bank account, its NDRI branch Karnal. She also presented the current status of PAi membership under different categories including the corporate members that has now grown to as many as 10 Local and MNCs. It was decided to celebrate Metchnikoff Day on May 15/16 as "Probiotic Day" by seminars/quizzes/debates by students. She requested that all corporate members should support the conferences/seminars held by PAi by making equal financial contribution. Dr. Jayabalan, NIT, Rourkela volunteered to prepare updated list of probiotic products in India. Prof. Sanjay Patole, Centre for Neonatal Research and Education, University of Western Australia and Department of Neonatal Pediatrics, KEM Hospital for Women, Perth, Western Australia, Perth suggested that short films, documentaries are the most powerful ways to reach the masses, especially in our country. He said that he can volunteer to help PAi in this area. PAi can develop a strategy (with the help of volunteer 'communication' experts) for reaching every common man, woman, and family in the country, to promote its cause, and commitment. Dr. Kanthi Kiran from NABI, Mohali came out with an interesting suggestion that PAi should take an initiative for starting a high quality journal on probiotics for disseminating the scientific data on the functional therapeutic efficacy of novel probiotic strains and product development for management of human health and diseases effectively. He volunteered himself to assist PAi to translate this initiative.



PROBIOTIC ASSOCIATION OF INDIA

Felicitation of Students during Reverie-2k16

As a part of the promotional activities of PAi among young research scholars and students, Probiotic Association of India participated in 20th All India Inter University Youth Festival 'Reverie-2k16' held at ICAR-NDRI from 11th to 13th of April, 2016. An evening session on the 12th of April during the fest was sponsored by PAi. The host of the program, Dr. Farhat Umar, highlighted the activities and importance of PAi, which was followed by an interactive quiz and a cultural program. The winners of the quiz and the best performers were awarded T-shirts by PAi. The session was attended by over 1000 students from across the country. The winner of the quiz was Mr. Kunal Kashap, a student of ICAR-NDRI. The award winning performers included Ms. Rizem Kour and Ms. Rishika of SKUAST Jammu; Ms. Ankita of ICAR-IVRI; Ms. Kamlesh, Ms. Priya, Mr. Pritpal Singh and Mr. Usman of ICAR-NDRI.





Acknowledgement

On behalf of Probiotic Association of India (PAi), I take this opportunity to express and acknowledge our gratitude and appreciation to honorable Dr. V. M. Katoch, Former Director General, ICMR; Dr. N.K. Ganguly, Former Director General, ICMR and visiting professor of eminence from DBT and Dr. S.K Dash Former President IPA and founder of UAS, a leading probiotic company at USA for their technical support and agreeing to our request to inaugurate the 3rd biennial conference and International Symposium held at NISER, Bhubaneswar, Odisha. PAi greatly appreciates the efforts taken by NISER particularly Dr. Palok Aich and his team for shouldering the responsibility of organizing this big scientific event by putting their head and soul to make it a memorable show from scientific perspective. Our esteemed corporate members viz. Sarvothamcare Ltd, Nestle India, Yakult India, Mother Dairy, Microbax Ltd, Chr-Hansen, Shree additives, Unique Biotech, Danone and PRAJ have been our real strength and have made a significant contribution in building this association and stood by us like a rock in accomplishing the mission of PAi from time to time. PAi greatly appreciates the kind support received from them from time to time in all its endeavors towards spearheading probiotic movement in the country vigorously so that health benefits attributed to consumption of probiotic foods and other formulations reach every nook and corner of the country for the benefit of society without any discrimination. It would not have been possible for PAi to organize this conference and the symposium without the financial and moral support received from our corporate members. It would not have been possible for PAi to organize this conference and the symposium without the handsome contributions made by M/S Sarvotham Care, Yakult Danone India and Unique Biotech. PAi also acknowledges its hearty thanks to Yakult India for sponsoring their overseas invited speaker for delivering special talk in the conference. The valuable support and encouragement received from Director, NISER, Bhubaneswar in this regard is also duly acknowledged. PAi also takes this opportunity to express its hearty gratitude to all of our highly distinguished and eminent speakers both from abroad and within the country for agreeing to participate in the conference and deliver their lead papers in the various technical sessions along with providing their valuable inputs for inclusion in this souvenir. Lastly, but not the least, PAi is committed to express its sincere thanks to one and all including the team of our dedicated students and faculty both from NISER and NDRI who put in their best efforts in organizing this event a great success. Lastly, help rendered by Ms. Taruna Gupta, Ph.D. student in Animal Biochemistry, NDRI Karnal is duly acknowledged for her assistance in preparation of this Newsletter.

(V.K.Batish)
Secretary, PAi



List of New Members of PAI

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Corrigendum

This is just to bring to the notice of our esteemed members that due to some unavoidable circumstances, PAi is not in a position to celebrate world probiotic day on the birthday of Metchnikoff recognized as the father of probiotic concept. Chris-Hansen had volunteered to organize this event formally in association with PAi this year but are not in a position to host due to some recent organizational changes in the company. Inconvenience caused as a result of this unexpected change is extremely regretted.



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(Haryana)