

CARBOHYDRATE NEWS LETTER

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Editor

Vinod K. Tiwari, PhD

Department of Chemistry, Institute of Science
Banaras Hindu University, Varanasi-5, India
Tel.: 0542-6702466(O), 91-9451896061 (M)
email: tiwari_chem@yahoo.co.in

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FROM THE EDITOR'S DESK ...

It is really heart-warming to present 17th issue of Carbohydrate News Letter (CNL) before you. I am heartily thankful to the Association of Carbohydrate Chemists and Technologists of India (ACCTI) for the utmost support and reliance for giving me opportunity to bear the responsibility of publication of another issue, CNL-2016. For more than three decades, the ACCT(I) has been an encouraging platform for the carbohydrate researchers dealing with different fields and aspects of carbohydrate chemistry and CNL is an effort to convey the significant advances and achievements of ACCT(I) throughout the year.

Carbohydrate moiety has been alluring the minds of chemists, biologists and nutritionists since 19th century. In spite of being explored for an era, carbohydrate chemistry is still a challenging and dynamic discipline which has emerged as even more demanding field with the blend of other technologies over the past few decades. The fascinating biological, chemical and structural aspects of carbohydrate moiety has compelled the scientists to explore it in various research fields starting from synthesis to pharmacology, nanotechnology and even in gene engineering.

The synthetic efficacy of carbohydrates is due to the great abundance, functional fertility, rigid structures, availability as mono-, di- and polysaccharides and chirality. These extraordinary properties of this moiety have been utilized in diverse synthetic approaches in form of synthetic auxiliary of simple to complex molecular architectures, scaffolds for peptide mimetics, chiral auxiliary to introduce chirality in a chemical transformation and ligands to support metal catalysis. In this era when green technology is becoming the most demanding approach in every field, carbohydrate moiety has also proven its worth in development of green synthetic tools such as asymmetric organocatalysts and ionic liquids.

The biological relevance of carbohydrates in various metabolic functions of body has enhanced the importance of carbohydrate-based templates in glyco-biological and pharmacological research. Many carbohydrate-derived drugs such as Acarbose, AMVISC, Hyalgan, Lovenox, Miglitol, ORTHOVISC, Relenza, Topamax etc. are available in market. Thousands of carbohydrate-derived molecules have shown excellent antibiotic, antibacterial, antifungal, anticancer, antiviral, antitubercular, insecticidal, antileishmanial, antiproliferative, HIV-1 inhibitor activities etc. In past few decades, carbohydrate moiety has been extensively used in molecular recognition, chemo-sensing, diagnosing and drug delivery systems too.

Nanoscience has emerged as an extremely imperative technology and the amalgamation of glycoscience with it has produced some valuable and vital glyco-nano materials such as glyco-nanotubes and glyco-nanoparticles with potential applications in medicinal field. These nano materials have shown promising activity as catalysts as well as in biomedicine as sensors and transport phenomena.

The above mentioned applications of glyco-technology are just a glimpse of an ocean of relevance of carbohydrate chemistry and the future prospects of this field are utterly inestimable. It is truly gratifying that ACCT(I) conference builds a podium to bring together the carbohydrate researchers not only from India but also from different parts of the world and gives opportunity to understand the miraculous world of carbohydrate chemistry by being a part of it. With these words, I, on behalf of the association, welcome you all to explore the adventures of carbohydrates with ACCT(I).

With Best Wishes & New Year Greetings

Vinod K. Tiwari

Editor, Carbohydrate News Letter

**Presidential Address, CARBO-XXX, Pondicherry
(December 29-31, 2015)**

Dear Professor Anisa Bashir Khan, Vice-Chancellor, In-Charge, Pondicherry University, Dr Soni, Professor Tharanikkarasu, Professor Ashok Prasad, Dr Sivasankar, distinguished guests, academicians, researchers & industrialists, my dear students, ladies and gentlemen, a very good morning to all of you. On behalf of the executive committee of the Association of Carbohydrate Chemists and Technologists India (ACCTI) it is my great pleasure to welcome you all to this wonderful Campus of Pondicherry University for this year's three-day conference, 29-31 December, 2015, CARBO-XXX.

Friends, as many of you may know, the Association of Carbohydrate Chemists and Technologists (India) was formed in 1984 at ATIRA, Ahmedabad at its first ever Meeting, with Dr Srivastava as its founder President. Dr Srivastava continued to serve the Association as its president until passing away in 1995. After the first two CARBO conferences between 1984 and 1986 at ATIRA organized by Dr Srivastava, the Meeting was taken to the campus of CFTRI in Mysore by Dr KR Bhattacharya who organized CARBO-III in 1987. Very unfortunately, Dr Bhattacharya who passed away at his home in Mysore on 22 Sept 2015 at the age of 86 years after a brief illness, is missed by all of us today. The annual Meeting of the Association (ACCTI) in the form of CARBO series of meetings have since traveled the length and breadth of the country, with the Association also growing steadily under the successive leadership of its past presidents. Undoubtedly after Dr Srivastava, Dr Soni has been the key person in turning the Association into what it is today. Publication of Carbohydrate News Letter (CNL) and its flagship e-journal, Trends in Carbohydrate Research (TCR) are two other important activities of the Association other

than the annual CARBO series of meetings. The various discoveries leading to the identification of a wide range of roles for carbohydrates, in addition to the traditionally recognized roles (of carbohydrate polymers such as starch and glycogen) as the source of energy and (cellulose and collagen) as structural materials, have led to intense work in the area of chemistry and biology of carbohydrates. Thus, although only limited they have so far been, the non-food uses of carbohydrates, especially those of carbohydrate polymers, continue to expand beyond the traditional areas of their application, namely, textile, paper, coating, oil well drilling, etc into others such as packaging materials and production of low molecular weight organic commodity-chemicals, etc. Development and optimization of green chemical and biochemical process for the production of value added bulk materials have also been areas of high research activities around the globe. Work on carbohydrates as well as carbohydrate-based materials with applications as drug/vaccine candidates, drug delivery materials, diagnostics, superabsorbents, detoxifiers, etc continue to progress in a significant manner.

Therefore it is no wonder that Professor Tharanikkarasu, the Organizing Secretary of CARBO-XXX, has chosen "Carbohydrates: Chemistry, Biology, & Applications as Green Building-Blocks for Bulk Chemicals, Fuels and Advanced Materials" as the focal theme of the meeting and I heartily congratulate him for having done so.

Once again, welcome everyone gathered here, and wish you all a grand, successful Meeting and a pleasant and memorable stay.

Prof. K P R Kartha
President, ACCT(I)

Invitation to CARBO XXXI Second International Conference on “New Frontiers in Carbohydrate Chemistry and Biology”



The Organizing Committee of the CARBO-XXXI International Conference on “New Frontiers in Carbohydrate Chemistry and Biology” and the Association of Carbohydrate Chemists and Technologists (India) (ACCTI) cordially invite academicians,

researchers, industrialists and students engaged in research & studies in various aspects of Carbohydrate Chemistry and Biology to participate in this forth coming Carbohydrate Conference to be held at University of Delhi, New Delhi, India from November 14-16, 2016.

Thematic areas of the conference includes:

- (i) Carbohydrates from Medicinal Plants; (ii) Carbohydrates as a Source of Bio-fuels; (iii) Carbohydrates in Synthesis of Useful Complex

Compounds; (iv) Carbohydrate Based Biopolymers: Modifications and Applications; (v) Glycobiology; (vi) Nucleic Acid Chemistry; (vii) Industrial Carbohydrate Chemistry; (viii) Structural Carbohydrate Chemistry; (ix) Neutraceuticals and Complex Carbohydrates.

For details about the conference, please contact the organizing secretary: Prof. Ashok K. Prasad, Organizing Convener, CARBO-XXXI, Department of Chemistry, University of Delhi, New Delhi, 110 007, India, Tel: 00-91-11-27662486 (O); 91-8826761666 (M); E-mail: carbodu2016@gmail.com ashokenzyme@gmail.com

Details about the conference will also be available on the websites: www.carbodu2016.com or www.accti.in

Invitation to ACCT(I) Satellite Symposium on “Recent Trends in Carbohydrate Chemistry”



The Organizing Committee of the ACCT(I) Satellite symposium on “Recent Trends in Carbohydrate Chemistry” RTCC-2016 cordially invite academicians, industrialists and scholars engaged in research in various aspects of Carbohydrate Chemistry to participate in this Carbohydrate Conference to be held at Department of Chemistry, Banaras Hindu University, Varanasi, India during November 12, 2016. This Carbohydrate event is hold on the occasion of Centenary Year Celebration of Banaras Hindu University (1916-2016). We wish to enrich

the scientific colloquium through your participation and sharing of views on experienced as well as young talent presentations on the subject. We look forward to your active participation in RTCC-2016 at the holy and historical city of Varanasi. For details about the conference, please contact the Convener, RTCC-2016, Dr Vinod K. Tiwari, Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, UP-221005, India, Tel: 91-542-670-2466 (O); 91-9451896061 (Mobile); E-mail: tiwari_chem@yahoo.co.in

Details about the conference will also be available on the websites: www.bhu.ac.in or www.accti.in

Status of physical properties and phyto-chemicals in the by-products of native and cured red rice and their profile in the prepared rice pan cake (Rice roti)

Rashmi, M., J. Raja Rajeswari and Vasudeva Singh*

Department of Studies in Food Science and Nutrition, Manasagangotri,

University of Mysore, Mysore - 570 006

email: singhva2003@gmail.com

Athikaraya paddy variety was cured by steam treatment, dried, shelled and milled. In cured de-husked rice, the l/b ratio decreased by 40%, thickness decreased by ~ 2% in paddy as well as in de-husked rice. True density and porosity increased in cured paddy, but decreased in cured de-husked rice. Equilibrium moisture content on soaking at RT was high for cured paddy and cured polished rice. Cooking time and volume were high in cured de-husked rice and polished rice. Water uptake was high for cured de-husked and

cured polished rice mg after cooking.

Free polyphenolic contents varied from 55 to 828 mg GAEq./100g in by-products like husk, bran, de-husked and polished broken. Bound and total phenolic content ranged from 94 to 383, 155 to 1076 mg GAEq./100g. Free phenolic content was high in native and cured Athikaraya fractions compared to bound phenolics, which was because of breakdown of conjugated phenolics into free phenolics. Flavonoid content of native and cured Athikaraya ranged from 28 to 286 mg

Catechin equivalent per 100g of sample. Proanthocyanidin contents of native and cured Athikaraya varied between 0.6 and 9.9 mg cyanidin chloride per 100g of sample. In majority of by-products, the cyanidin chloride content decreased after curing. The total anti-oxidant activities of native and cured Athikaraya varied between 12 and 85 mg ascorbic acid equivalent per 100g of sample. The activity decreased in husk, de-husked broken, polished broken compared to native, however the activity increased in cured bran, de-husked rice and polished red rice. The reducing power of native de-husked and milled Athikaraya varied between 2 and 620 mg quercetin

equivalent per 100g of sample. Curing increased the reducing power in de-husked broken, de-husked rice and polished rice. Differences were not there between native and polished broken. The native bran had strongest anion radical scavenging activities, curing reduced this activity in different by-products. Rice pan cake was prepared from the de-husked and polished broken of native and cured pigmented rice. Some of the phytochemical like free, bound and total phenolics, flavonoids were retained in the product and there was increase in antioxidant activities in the products.

Status of physical properties and phyto-chemicals in the by-products of native and germinated red rice and their profile in the prepared product Idiyappam

Nisha, R., J. Raja Rajeswari and Vasudeva Singh*

Department of Studies in Food Science and Nutrition, Manasagangotri,

University of Mysore, Mysore - 570 006

email: singhva2003@gmail.com

Commercial Jyothi paddy was germinated at room temperature and processed further to various fractions like husk, bran, de-husked head rice and broken, polished head rice and broken. Major differences were not seen in size and shape of paddy before and after germination. Bulk density decreased by 6% in paddy, 6.6% in de-husked rice. True density, porosity, 1000 kernel weight decreased to different extent in paddy and de-husked rice. Alpha amylase activity increased in husk, bran, de-husked rice, polished rice, in their head rice and broken compared to their respective native forms.

Total polyphenols ranged from ~ 120 to 2765 mg GAEq:/100g in native and its fractions; in germinated samples, it varied from ~ 190 to 4565 mg GAEq:/100g. In native polished rice it was lowest and highest was in native bran, whereas in sprouted one, lowest was in germinated polished rice and highest was in bran of germinated grain. Flavonoids ranged from ~ to 135 mg Catechin equivalent per 100g of sample. The contents increased marginally after germination but it decreased in the case of bran of germinated paddy by

50%, in some cases it remained almost same. Tannins decreased after germination, in general, except few, where there was marginal increase observed. Proanthocyanidins decreased in de-husked rice, bran, de-husked broken after germination, but highest was observed in native bran. Total anti-oxidant activity of native and germinated Jyothi paddy varied from ~ 8 to 80 mg ascorbic acid equivalent per 100g of sample. The activity decreased after sprouting in de-husked rice, de-husked broken, de-husked head rice and bran, however the activity increased in the case of husk, polished rice and its broken of germinated sample. Ferric reducing power of sample revealed that the reducing power increased in the germinated sample of husk (100%), however it reduced in sprouted samples of de-husked rice (37%), de-husked head rice (51%), and its broken (19%), bran (75%) and polished rice (43%). Hydrogen peroxide activity increased after germination in various fractions of Jyothi paddy. Idiyappam product prepared from milled fractions showed greater anti-oxidant activity compared to de-husked rice fractions.

COME FORWARD WE NEED YOUR SUPPORT-PUBLISH YOUR VALUABLE RESEARCH IN

TCR TRENDS IN CARBOHYDRATE RESEARCH

Editor in Chief- Dr P. L. Soni

NAAS Score 3.34

Impact Factor 0.562

Award Winners of CARBO XXX - 2015



Life Time Achievement Award - 2015



The Association of Carbohydrate Chemists and Technologists of India (ACCTI) is privileged to honor the most successful chemists, biologists and technologists in the country who are working in the field of Glyco-science by giving them Life Time Achievement Award comprising of a Plaque, Citation, Shawl and Cash award of Rs. 50,000 from Lucid Colloid Group, Mumbai annually. Recently, **Prof Naveen K. Khare** was conferred ACCT(I)-Life Time Achievement Award for the year 2015 at CARBO XXX held at Pondicherry University on December 29-31, 2015, for his contribution to Glycobiology. Prof Khare has contributed significantly to Carbohydrate Chemistry. Prof Khare became full Professor in Chemistry since 2006 at University of Lucknow. He did his PhD at York University, Toronto (1986-1988) and also worked as Research Associate at York University, Toronto (1991-1993). He was selected as visiting Scientist at Southern Research Institute, USA (1999-2002). His research area consists, synthetic carbohydrate chemistry related to bacterial polysaccharides and natural product chemistry related to oligosaccharides and their glycosides. Prof Khare published 74 research papers in reputed journals. He also wrote a book chapter: vol. 9, 61, 1997. ED: L. Echmeister, edited by W. Hertz, G.W. Kirby, R.E. Moore, W. Steglich & Ch. Tamm. Published by New York (springer verlag). He also published 42 publications in conferences. Prof. Khare guided 13 Ph.D. students and 2 M.Phil. students. Prof Khare also helped in writing

monograph "COMPENDIUM OF INDIAN MED. PLANTS" vol.1, 1990 of publication & information directorate, New Delhi. He also worked as Coordinator, M.Sc. Pharmaceutical chemistry, university of lucknow 2011-2014. Worked as Director, Development & Planning Board, University of Lucknow, 2012-13. Director, Admission 2013, University of Lucknow, Lucknow. Vice President, Association of Carbohydrate Chemists & Technologists (India) since 2013. Ex Secretary and Joint Secretary of ACCTI. Editor, Carbohydrate News Letter published by Association of Carbohydrate Chemists and Technologists of India (ACCTI), 2007-2011. Prof Khare got the Best Teacher Award by the Chemical Research Society of India (CRSI), IISc, Bangalore on July 21, 2012. Got cash award for best paper entitled "Stereoselective synthesis of di and trisaccharide fragment related to the O-polysaccharide of *Acetobacter xylinum* as artificial antigen" in "International Symposium on Drug Development" held at C.D.R.I., Lucknow, 1994. Best Teacher's Award-2015 by Awadhnama Educational and Charitable Trust, was given by Mr. Abhishek Mishra, Minister of State Attached to Hon'ble Chief Minister (Vocational Education & Skill Development Ministry), U.P. on Teacher's Day (Sept. 5, 2015). Best poster award (2015) entitled "Synthesis of oligosaccharide fragments related to E.Coli strains" in National Convention of Chemistry Teachers (NCCT-2015) held at Lucknow University, Oct. 8-10, 2015. He is also working as Director, IGNOU Study Center, Lucknow University, Lucknow since July 2016.

Award for the 'Best Paper Published in TCR' 2015



Prof. Indrapal Singh Aiden, currently Head, Department of Chemistry, Indian Institute of Technology Chennai, India is associated with the Department, since December of 1995. He obtained his M.Sc. degree in Organic Chemistry (1983) from Pune University and then proceeded to join the Research Center of Hoechst India Ltd, located at Mulund in Mumbai. He earned his Ph. D in 1991 (Mentor: Prof. N. S. Narasimhan at University of Pune) and was selected as a Fellow-Scientist, under the quick-hire scheme at National Chemical Laboratory, Pune. In April 1992, he proceeded for a post-doctoral fellowship at the University of California, Santa Cruz (with Prof. Rebecca Braslau) for exploring synthetic aspects of radical based chemistry. In 1993, with the prestigious AvH fellowship, he joined

the group of Prof. Richard R Schmidt, University of Konstanz, Germany, the doyen of carbohydrate research and engaged in the most difficult synthetic challenge (then), the C-glycoside of Neuraminic acid towards C-linked Sialyl-Lewis-X. His interests to pursue synthetic carbohydrate chemistry were triggered in this phase of his academic career. In December of 1995, he joined IIT-Madras as Assistant Professor. His research activities have been in two directions. The first direction, aims at developing novel Synthetic equivalents/building blocks based on Weinreb amide (WA) functionality and their applications in synthesis of important molecules. The second direction aims at the synthesis of important and challenging targets from the realm of carbohydrate chemistry, under the broad heading of C-glycosides. One of the building blocks, based on Weinreb-amide, and developed at IIT-Madras,

has a place in Aldrich Catalogue [No: 56, 108-8]. He rose to the rank of full Professor in April 2006. During this first decade of his career at IIT-Madras, he was bestowed with yet another prestigious JSPS-invitation Fellowship from Japan (2003 to 2004) to work with another eminent carbohydrate chemist, Prof. S. Kusumoto, at University of Osaka.

He has given several invited lectures in national and international symposia and published over 62 peer reviewed publications and four patents. He was the co-convenor of the carbohydrate conference in 1999, at IIT-Madras. In 2013, he has been selected for MNASc. It

will be of interest to note that in confidential evaluation by the students at IIT-M during the last twenty years, he has been consistently rated as a very good teacher. Recently, Prof Indrapal Singh Aidhen was awarded for the best paper published in TCR, entitled as: Acyl-Anion Chemistry for the Synthesis of C-Aryl Glycosides: Synthetic Efforts Towards C-Aryl Septanositides Trends In Carbohydrate Research, Vol.6, No.4 (2014) 37-46, by the Association of Carbohydrate Chemists & Technologists-India at CARBO XXX, Pondicherry University in 2015.

ACCT(I) Carbohydrate Excellence Award-2015



Prof Ashok K. Prasad is associated with University of Delhi as a Professor of Organic Chemistry. He significantly contributed over 210 publications (citations over 2700 and h-Index: 27) and also seven patents of high repute. Prof Prasad received 'ISCB

Award for excellence -2014' in the area of Chemical

Science. Prof Prasad also invited as Visiting Professor at JAIST, Japan in December 2015. Recently, Prof Ashok K. Prasad was awarded with "Excellence in Carbohydrate Research Award" by the Association of Carbohydrate Chemists & Technologists-India in 2015, at CARBO XXX Pondicherry University, for his contribution towards promoting synthetic carbohydrate chemistry through teaching and research.

6th C. G. Merchant Memorial Lecture - 2015



Prof Bimolendu Ray, is currently working as full professor at University of Burdwan, West Bengal, He worked as Associate Professor, Reader and Senior Lecturer, and Lecturer at university of Burdwan in year 1997-till date. Prof Ray also

worked as a Teacher in USIC at The University of Burdwan from 1986-1997. He did his Masters from Burdwan University and PhD with S Ghosh Majumdar, at Burdwan University. Prof Ray did his Postdoc studies with Prof A. Driouch, Rouen University, France (1997-2003) and with Prof Marc Lahaye, I N R A, France (1992-1994). Prof Ray also worked as Senior Visiting Scientist with Prof Peter Capek, Slovak Institute of Science, Slovakia, 2009 (May-July). Visiting Scientist, with Prof Yong Il Park, The Catholic University of Korea, ROK, 2010(August). Visiting Scientist, with Prof M. Marschall, University of Erlangen-Nuremberg, Germany, 2010 (December). Prof Ray got Postdoctoral scholarship of the Universite de Rouen (Normandie Fellow), France, from SAIA, n.o., Slovakia and, from I. N. R. A., France. The Research area of Prof Ray comprises Polysaccharides and its structure, interaction, function and

modification. Prof Ray have several research achievements as listed below: 1. Development of a novel strategy based on ESMS analysis of peracetylated oligomeric fragments generated by Smith degradation. 2. Promotion of powerful techniques for studying the molecular interaction between arabinogalactan protein and bovine serum albumin. 3. Introduction of an innovative strategy for the generation of a spectrum of chemically engineered glycan sulfates with different chemical compositions, sulfate contents and molecular mass. 4. Generation of several potential antiviral drug candidates (Glyco-biology, 2009; Phytochemistry, 2011, 2011), antitussive agents (Respiratory Physiology & Neurobiology, 2013; eCAM, 2013; J Ethnopharmacol, 2011) and antioxidative molecular entities (Biomacromolecule, 2013; Carbohydr. Polym., 2014). 5. Characterization of new molecular entities from natural products. Prof Ray is the author of 4 book chapters and have more than 61 research articles in journal of high repute. Prof Ray is also the Life Member of, CRSI, Ind Chem Soc., ACCTI, organizations. Recently Prof Ray has been awarded '6th C.G. Merchant award-2015 sponsored by Lucid Group, Mumbai, India at the platform of ACCT(I).

8th Dr H. C. Srivastava Memorial Lecture - 2015



Dr H. C. Srivastava Memorial Lecture was given by the eminent Carbohydrate scientist and the speaker is honored with citation and a cash award of Rs. 20,000.00 by the Association. The 8th Dr. H.C. Srivastava Memorial Lecture is given

by **Dr T. Mohan Das**, at XXX Carbohydrate Conference held at Pondicherry University on 29-31 December 2015. Dr T. Mohan Das is associated with Central University of Tamil Nadu (CUTN), Thiruvavur, India since 2013 as Associate Professor in the Department of Chemistry. Before coming to CUTN he worked as an assistant professor in the Department of Organic Chemistry, University of Madras, Chennai between the period 2004-2013. He worked on synthesis and characterisation of saccharide derivatives including n-glycosides and their metal ion complexes at Indian

Institute of Technology Bombay, Mumbai, India (Mentor: Prof C. P. Rao) since 1996 and awarded PhD in 2001. He has two post-doctoral research experiences. In 2002 he joined to the National Chung Hsing University (NCHU), Hsinchu, Taiwan as a PDF then he moved to National Tsing Hua University (NTHU), Hsinchu, Taiwan in 2003. He worked there until his return to India in 2004 to join as an assistant professor in University of Madras. He delivered several invited lectures at different institutes in India and Taiwan. He supervised eight PhD thesis, thirteen M.Phil thesis and successfully completed eight major research projects from DST, UGC, CSIR and other major funding agencies. He has over 53 publications including one Patent of high national and international repute (Elsevier, ACS, RSC, etc). His research received prestigious awards like outstanding young scientist award scheme for the year 2006-07 from Department of Science and Technology (DST), New Delhi.

1st Prof. N Roy Award for Excellence in Synthetic Carbohydrate Chemistry-2015



Dr Vinod K. Tiwari (born in Bihar, India) is associated with Banaras Hindu University since 2005 as Assistant Professor of Organic Chemistry. In recognition of his significant contribution in the area of Synthetic Carbohydrate Chemistry and in promotion of scientific understanding in this

field, ACCT(I) awarded him with '1st Prof N Roy Award for Excellence in Synthetic Carbohydrate Chemistry-2015'. He has contributed 105 publications and also 8 Patents and 12 invited book chapters of high repute (h-index = 27, 2650 citations). Recently, he accepted for the Editorial board Position for Journal, '**Current Organic Chemistry**' and also '**Letters in Organic Chemistry**'.

Fellow-ACCT(I)

The highest recognition from ACCTI is the Fellowship (F-ACCTI) which has been awarded to Prof PV Salimath, Prof GS Chauhan, Dr Subodh Sharma, Prof Virinder S Parmar, Prof Christophe Len.



Prof P V Salimath has contributed significantly to the understanding of Food Carbohydrates in relation to Structure and Function in Foods. His research contributions are well documented in several leading Journals of high repute.



Prof G S Chauhan contributed in the field of functionalization of polysaccharides and biomass utilization for specialty applications ranging from drug delivery devices to synthesis of novel adsorbents and extractants for water treatment.

Dr Subodh Sharma did his PhD from FRI Dehradun under the guidance of Dr PL soni in year 1988-1992. He did HACCP course from Netherland and PG diploma in management. Currently he is working as Asst. General Manager with the India Glycols, Kashipur.



Prof V S Parmar did his MSc and PhD from Delhi University. He has Postdoc and visiting scientist research experience of nearly 10 years in different Institutes/Universities at abroad. He worked as faculty at DU nearly 44 years. Prof Parmar

supervised 85 PhD students and have more than 467 research articles. He also inventor of 21 patents and many more.

Prof C Len did his PhD from France and worked as postdoc from Hull University UK and become Professor at University de Poitiers France in 2004. Prof Len have 125 research articles, 3 chapters and 6 patents.

MINUTES OF THE ANNUAL GENERAL BODY MEETING- 2015 and EC MEETINGS HELD ON 28.12.2015 at Pondicherry University, Puducherry & on 27.05.2016 at Delhi University, Delhi

The Annual General Body meeting of the Association of Carbohydrate Chemists and Technologists (India) was held at Pondicherry University at 6.30 PM on 29/12/2015 at the conference venue. A total of eighty members of the Association and over seventy non-member-delegates attended the meeting along with the participants and guests attending the XXXth Carbohydrate Conference organized by Pondicherry University. President, ACCT(I), Prof K P R Kartha gave the introductory speech, and Prof Ashok Prasad, Secretary, ACCT(I) presented the welcome address to the delegates and requested Dr Vinod K Tiwari, Joint Secretary, ACCT(I) to read out the minutes of the previous GB meeting held on 29.12.2014 at 6.30 PM during CARBO-XXIX organized by CIAB at the IISER Mohali campus. The minutes were accepted unanimously after it was proposed by Dr P L Soni and Prof Naveen K. Khare and seconded by Dr Asish K Sen and Dr R P Tripathi. Prof Ashok Prasad then described the previous years' activities of the Association and the agenda finalized by the Executive Committee (EC) at its meeting that was held on 28.12.2015 at the Department of Chemistry, Pondicherry University.

Dr Amit Bhatt, Treasurer, ACCT(I) presented the audited 'Statement of Accounts' of ACCT(I). After a brief discussion, the 'Statement of Accounts' was accepted by the members unanimously. It was proposed by Dr P L Soni and was seconded by Dr R P Tripathi. Following this, Dr Vinod Tiwari, Editor, Carbohydrate News Letter (CNL) placed the 'Statement of Accounts' of CNL (Issue 16) before the GB. Proposed by Prof Ashok Kumar and seconded by Dr Bharat Joshi, it was accepted unanimously by the GB. The CNL is currently being published annually on a 'no loss no gain' basis. The publication cost of the CNL is currently met with support from ACCT(I) and from the earnings from the advertisements from Lucid Colloids, Hindustan Gum & Chemicals Ltd., Sunita Hydrocolloids Pvt. Ltd. and Encore Natural Polymers Pvt. Ltd. The members requested other industrial houses also to come forward and support the cause of CNL and its sustained publication. To make up for the deficit in the statement of account of the CNL, Sri N C Dhuldhoya suggested extending the sponsorship campaign to the Tamarind Industries also. It was proposed that the advertisement fee be revised as follows: Full color page - Rs. 6000.00; & half color page - Rs.4000.00. It was seconded by Dr Brij R Sharma and Dr Bharat Joshi.

Subsequently the proposal for constituting a 'Constitution and Bye-law Subcommittee' was discussed and Dr A K Sen was nominated as the Chairman of this committee. Dr Sen shall induct other members to this committee as required for achieving the goals of the constitution of the committee. The proposal by Dr Varma for having a 'Carbohydrate Chemistry Chair' constituted was then briefly discussed. It was appreciated by one and all. It was

after the preparation of a proposal for meeting the financial commitments in its regard.

Members also expressed their view that the interaction (collaboration) between the participants from academia and industries in the CARBOs has perhaps diminished is insufficient. Prof G S Chauhan, Prof A K Sen and Dr Vasudeva Singh were given the responsibility to explore the possibilities for increasing the membership from industrial houses and to invite new people from Industry to the ambit of future CARBOs. It was expected that they will come up with an action plan in about two months.

Members expressed their deep sense of gratitude to Prof Tharanikkarasu Kannan, his team and the Pondicherry University for the wonderful arrangement made for CARBO-XXX in the Pondicherry University Campus and thanked them for the same.

Prof Ashok Prasad then readily accepted his pleasant willingness to be the Organizing Secretary of CARBO-XXXI and to host it at the Department of Chemistry, Delhi University (DU), Delhi. All the members present expressed their deep gratitude to Prof A K Prasad for the same. CARBO-XXXI shall be the 2nd International Carbohydrate Conference by ACCT(I). With a view to bringing greater visibility to the activities of ACCT(I), Prof Ashok Prasad shall make efforts to bring together about 20 or so renowned scientists from India and abroad from academia and industry at the CARBO-XXXI.

In view of the fact that Banaras Hindu University (BHU) will be celebrating its Centenary in 2016, it was also proposed that a one day satellite symposium be organized at BHU on behalf of ACCT(I). Dr Vinod Tiwari readily consented to be the Convener of this proposed Meeting.

EC shall discuss and recommend the names of accomplished scientists and technologists to be honored as the Fellow of ACCT(I) at CARBO-XXXI to be held in Delhi.

It was decided that any change of address of the life members (ACCTI) should be posted on the ACCT(I) website. Furthermore, the proposal to enhance the life membership fee from the current Rs. 2000/- to 3000/- was taken up for discussion and was approved for implementation from 01.01.2016. All life members were then requested to ensure that any change of address will be communicated to the website administrator promptly so that the ACCT(I) website stays updated in this regard.

A brief discussion on the proposal for forming ACCT(I) local chapters was made. It was generally felt that this can be indeed considered and formally accepted once the organization has grown enough in its membership size such that the local chapters would have members sufficient for holding such meetings fruitfully. However, invited talks/brain storming sessions involving ACCT(I) members as hosts/speakers/invitees/or the like and students & researchers from academia/industry can still be considered for ACCT(I) activities locally if feasible.

The proposal to hold the next international conference

abroad was discussed in great detail. Prof Ashok Prasad was given the responsibility to find out the viability of the proposal. The event should include carbohydrate chemists and technologists from abroad as invited speakers as it is currently the case. The foreign delegates would be invited by the Local Organizing Committee (LOC) and their local hospitality will be borne by the LOC & ACCT(I). For locating possible hosts outside India, countries such as Taiwan, China, Malaysia, Thailand, South Korea, etc could be considered.

The proposal for the institution of an award, to be called, Prof M P Khare Memorial Lecture Award, by the financial support of Prof Anakshi Khare in memory of her late husband Prof M P Khare was accepted after a thorough discussion and a committee was constituted for formalizing the rules and regulation for this new award. The House sincerely thanked Prof A Khare for her kind support to ACCT(I) and its activities.

Dr A K Sen informed the House that a donation of Rs 25000.00 has been proposed by Mrs A K Mukherjee for the institution of an award in the name and honor of her late husband Prof A K Mukherjee to go to a young carbohydrate researcher. The House thanked Mrs Mukherjee for her generous support to the Association and its activities but after a thorough discussion it was concluded that to make the award operational in a sustainable manner the donation must be \geq Rs 200000.00. Dr Sen shall take up the matter for further discussion with Mrs Mukherjee.

The House was informed of the successful initiation of the new "ACCTI Excellence in Carbohydrate Entrepreneurship Award", the first ever winner of the award being Lucid Colloids Ltd. At CARBO XXX in Pondicherry as per the decision taken at CARBO-XXIX organized by CIAB in Mohali. It carries an award plaque with citation and a certificate of appreciation.

The GB congratulated Prof Naveen K Khare, Prof Ashok K Prasad, and Prof Indrapal Singh Aidhen for receiving the Life Time Achievement Award, the 4th-Excellence in Carbohydrate Research award, and the sixth e-TCR award respectively. The GB then congratulated Dr VK Tiwari, BHU Banaras for winning the first Prof N Roy Award for Excellence in Synthetic Carbohydrate Chemistry at CARBO-XXX. The GB also thanked Prof Bimolendu Ray and Dr T Mohan Das for delivering the sixth Mr C G Merchant memorial lecture and the Dr H C Srivastava Young Scientist Award Lecture-2015 and Prof C Len for the keynote address on the first day of CARBO-XXX.

ACCT(I) congratulated Dr Swati Jadhav and Dr Vivek Sharma, winners of "ACCT(I) Best Ph.D. Thesis Award" for the years 2014 and 2015, respectively. The award consists of a citation/certificate and a cash of Rs 10000.00 sponsored by Lucid Colloids Ltd. The ACCT(I) Best Thesis Award" aims to recognize the best doctoral research work carried out in the area of glycosciences and to promote carbohydrate research worldwide, in particular, India. The award is being bestowed during the Carbohydrate Conference organized by ACCT(I) annually.

The GB was informed that the "Open House Discussion" that was started at CARBO-XXIX in Mohali shall be continued and the efforts made by Dr A K Sen in this regard was much appreciated by one and all. A discussion was held on the need for attracting good contributions for the e-TCR from abroad besides those being received now.

ACCT(I) members and delegates greatly appreciated Prof T Kannan, Organizing Secretary, CARBO-XXX and Head, Department of Chemistry, Pondicherry University for the excellent arrangement during CARBO-XXX. The GBM lasted for nearly two hours and was concluded with a vote of thanks to the chair by Dr V K Tiwari and Prof Ashok Prasad.

Minutes of the EC Meeting held at DU on 27-05-2016

The meeting was held at the International Guest House, DU, Delhi in the meeting room under the chairman of Prof KPR Kartha, President, ACCT(I). Fifteen of the nineteen EC members of the Association along with five co-opted members from the Faculty of Chemistry, DU, including Prof V S Parmar, were present. The meeting lasted for approximately four hours.

Various points concerning the organization of the International Carbohydrate Conference, CARBO-XXXI to be held in Delhi was discussed. Prof Ashok K Prasad briefed the EC with the updates on the organization of the event. It was generally felt that the various aspects concerning the matter is already being adequately addressed by the organizing team of DU. As emerged from the meeting, efforts will be made in order to bring several distinguished researchers working on different aspects of carbohydrate chemistry worldwide.

The above discussion was followed by a brief update by Dr Vinod K Tiwari, Joint Secretary, ACCT(I) and the Organizing Secretary, Satellite symposium on carbohydrates at Banaras Hindu University (BHU), Banaras. The meeting shall be held on 12th November, 2016 at the Department of Chemistry, Institute of Science, BHU, Banaras. The meeting shall be a fitting way of celebrating the occasion of the centenary year of BHU (1916-2016).

In view of the sponsorship obtained from Prof Anakshi Khare with her proposal for the institution of a new award by ACCT(I), it was decided that the award shall be called, Prof M P Khare Memorial Lecture Award and shall be implemented from CARBO-XXXI in Delhi.

Dr P L Soni, Editor-in-Chief of e-TCR recalled that the existing Editorial Board members have completed eight years of their excellent service to the cause of the Journal. It was therefore felt that a new team could now be constituted to look after the editorial work and continue its efforts to see the Journal grow further. Thus a editorial team was also constituted and the e-TCR website shall be updated accordingly.

The EC meeting was concluded with a vote of thanks to the chair by Prof V S Parmar and Prof Ashok Prasad.

Report of the 30th Carbohydrate Conference (CARBO-XXX)

The 30th carbohydrate conference (CARBO-XXX) was organized by Department of Chemistry, Pondicherry University and held at Convention - cum- Cultural Complex, Pondicherry University from December 29, 2015 to December 31, 2015. The conference was inaugurated by the Chief Guest Prof Anisa Basheer Khan, Vice-Chancellor (i/c), Pondicherry University. The theme of the conference was Carbohydrates: Chemistry, Biology & Applications as Green Building Blocks for Bulk Chemicals, Fuels and Advanced Materials. Prof Tharanikkarasu Kannan, Organizing Secretary, CARBO-XXX and Head, Department of Chemistry, Pondicherry University welcomed all the gathering and explained about the different topics of discussion during the conference. Then, Prof KPR Kartha, President, Association of Carbohydrate Chemists & Technologists (India) (ACCTI) gave insight into the activities of ACCTI and importance of role of carbohydrates in humankind. Then, Dr PL Soni, Editor-in-Chief, Trends in Carbohydrate Research and Advisor to ACCTI delivered a guest of honor address. Prof Anisa Basheer Khan, VC (i/c) Pondicherry University delivered a presidential address and inaugurated the conference. She highlighted the challenges in front of carbohydrate research and emphasized the need of carbohydrate research for application in day today life. Prof Naveen K Khare, University of Lucknow, Lucknow was awarded Life Time Achievement Award 2015 and Prof Ashok Kumar Prasad, University of Delhi, Delhi was awarded Excellence in Carbohydrates Research Award 2015. CG Merchant Award 2015 was conferred to Prof Bimolendu Ray, University of Burdwan, West Bengal and N. Roy Award 2015 was conferred to Dr Vinod K Tiwari, Banaras Hindu University, Varanasi. TCR Best Paper Award was conferred to Prof Indrapal Singh Aidhen, IIT Madras, Tamil Nadu and H. C. Srivastava Young Scientist was awarded to Dr T. Mohan Das, Central University of Tamil Nadu. The Best Ph.D. Thesis 2014-15 was awarded to Dr Swati Jadhav, ICT, Mumbai. At the end of the conference, Dr. C. Sivasankar, Associate Professor, Department of Chemistry, Pondicherry University and Treasurer, CARBO - XXX proposed vote of thanks.

The conference covered 44 lectures which include one key note address, 7 award lectures, 19 invited talks, 07 oral presentations and 35 poster presentations out of which top ten researchers were allowed to present their posters again under special Oral presentation and top three presentations were selected for ACCTI best Young Scientist Award 2015. The details of Technical Sessions are given below.

Technical Session I: T-1 Award Lecture Session (Chairs: Prof K.P.R Kartha, NIPER and Dr Sanjay V. Modi, Lucid Colloids Ltd.)

·Life Time Achievement Award: Prof Naveen K Khare, University of Lucknow, Lucknow.

An Expedition from Naturally Occurring Steroidal Glycosides to Glycobiology

·Excellence in Carbohydrates Research Award: Prof Ashok Kumar Prasad, University of Delhi, Delhi
Glucose to Novel Amphiphiles and Macrocycles of Significant Importance

·CG Merchant Award: Prof Bimolendu Ray, University of Burdwan, West Bengal

Insight into the Structure of an Antioxidative Arabino-galactan Protein from *Anogeissus Latifolia* Gum by ESMS Based Approach.

·N. Roy Award: Dr Vinod K Tiwari, Banaras Hindu University, Varanasi

Synthesis of Diverse Glycoconjugates of Chemotherapeutic Potential

Technical Session II: T-2 Award Lecture Session- II (Chairs: Dr Brij Raj Sharma, SHCL, Jodhpur and Prof Virinder Parmar, University of Delhi)

·TCR Best Paper Award: Prof Indrapal Singh Aidhen, IIT Madras, Tamil Nadu

Building Blocks for the Synthesis of PPAR Agonist and SGLT Inhibitors

·H. C. Srivastava Young Scientist: Dr Mohan Das, Central University of Tamil Nadu

Chemistry of Glycohybrid Molecules

·Best Ph.D. Thesis 2014-15: Dr Swati Jadhav, ICT, Mumbai
Enzyme-Polysaccharide Interactions: Effects on Enzyme Activity and Stability

Technical Session III: T-3 Food Technology and Medicinal Application of Carbohydrates (Chairs: Dr A. J Varma, NCL, Pune and Prof Naveen K Khare, University of Lucknow, Lucknow)

·Dr R.P. Tripathi, CDRI, Lucknow,

Monosaccharide's in Search of New Chemotherapeutics

·Dr G. Muralikrishna, Central Food Technological Research Institute, Mysore

Characterization of Resistant Starch Degrading Enzyme from *Lactobacillus Fermentum*

·Prof Vasudeva Singh, University of Mysore, Mysore

Physical Properties, Nutrient Composition, Phyto-Chemicals and Anti-Oxidant Activities of De-Husked Rice Before and After Parboiling Pigmented Paddy Varieties by Simple Hot Soaking

·Prof P. R. Sudhakaran, University of Kerala, Trivandrum
VE Cadherin -Catenin Signalling; Implications to Ingiogenesis

Technical Session IV: T-4 Biomass to Useful Products and Bio-medical Applications (Chairs: Dr P.L. Soni, Editor in Chief, TCR and Dr Bharat Joshi, Industrial Guar Products Pvt. Ltd.)

·Prof Christophe Len, Sorbonne Universités, France
Green Chemical Synthesis and Processing in Water Application to Carbohydrate

·Dr A.J. Varma, CSIR - National Chemical Laboratory, Pune

From Lignocellulosic Biomass to Nanocellulose, Cellulose

Biorefinery, Biofuel, and Biodegradable Polymers

•Prof Sunil Sharma, University of Delhi, Delhi

Carbohydrate based Amphiphilic Dendritic Architectures for Bio-Medical and Metal Sensing Applications

•Dr Sagarika Biswas, Institute of Genomics and Integrative Biology, Delhi

Plasma Glycoproteomic Profiling of Rheumatoid Arthritis: An Applications with Case Studies

Technical Session V: T-5 Synthesis of Carbohydrate and Related Materials (Chairs: Prof Ashok K. Prasad, University of Delhi and Prof Vineet Kumar, FRI)

•Prof K. P. Ravindranathan Kartha, National Institute of Pharmaceutical Education and Research (NIPER), Punjab

•Mechanochemical Methods Useful in Synthetic Carbohydrate Chemistry

•Dr Asish Kumar Sen, CSIR-Indian Institute of Chemical Biology, Kolkata

New Generation Catalyst in Glycosylation Reaction: Introduction of Pd-CNT in Carbohydrate Chemistry

•Dr P. Ramu Sridhar, University of Hyderabad, Hyderabad

Stereoselective Synthesis of Oligo Glyco-Amino acids and Septano Oligo-saccharides

•Dr Jeyakumar Kandasamy, Indian Institute of Technology (BHU) -Varanasi,

Technology Associated Synthesis of Carbohydrates: Automated Synthesis of Glycosaminoglycans

•Dr Asish Kumar Sen, CSIR-Indian Institute of Chemical Biology, Kolkata

Miles to go...

Technical Session VI: T-6 Starch and related Products (Chairs: Dr S.N.Moorthy, CFTCRI, Mysuru and Prof P. R. Sudhakaran, Univ. of Kerala)

•Prof Kalpana Chauhan, Shoolini University, Solan, Greener and Innovative Method for Sulfur Functionalization of Polysaccharide

•Dr S.N. Moorthy, Retd. Scientist, CTCRI, Trivandrum, Some Innovative Application of Starch and Starch Derived Products in Pharmaceutical Fields

•Dr Amit Bhatt, Maya Group of Colleges, Dehra Dun, Aloe Vera: Medicinal and Traditional Uses

•Dr Deenan Santhiya, Delhi Technological University, Delhi, Role of Cellulose and its Derivatives in Nano-bioactive Glass Synthesis for Bone Regeneration

•Dr S.N.Chattopadhyay, ICAR- National Institute of Research on Jute & Allied Fibre, Technology, Kolkata, Use of Guar Gum as a Thickener for Printing of Jute Fabric with Natural Dyes

•Prof Ritu Mahajan, Chandigarh University, Mohali, Synthetic strategies for the preparation of Glyconanomaterials to amplify the glycan mediated interactions

•Open House Discussion on Carbohydrate, Moderator: Dr Ashish Kumar Sen (IICB, Kolkata)

Technical Session VII: T-7 Poster Award Presentation (Chairs: Prof Christophe LEN, Sorbonne Université, and G.

S. Chauhan, Himachal Pradesh University)

Top ten researchers of Posters were allowed to present their data as special oral presentations at technical session VII and top three were selected from these ten presentations.

Technical Session VIII: T-8 Carbohydrates Synthesis (Chairs: Dr Anupkumar Bhaskarapillai, IGCAR and Prof Bimolendu Ray, University of Burdwan)

•Dr Ramendra Pratap, University of Delhi, North Campus, Metal Catalyzed Modification of Nucleosides

•Dr Brajendra K. Singh, University of Delhi, North Campus, Glucose: A Better Alternative Reductant for Copper (I) Catalyzed Heterocyclic Ring Formation

•Prof Rina Ghosh, Jadavpur University, Kolkata, My recent synthetic journey with oligosaccharides related to bacteria

•Dr Kanwal J. Kaur, National Institute of Immunology, New Delhi, Influence of sugar variants on biological activities of peptides

•Dr Arya Ajay, University of Lucknow, Lucknow, Stereoselective Editing of Sweet System

Technical Session: T-9 Application of Carbohydrate related Natural Products (Chairs: Prof Sunil Sharma, University of Delhi and Dr Subodh Sharma, India Glycols Ltd., Dehradun)

•Dr Anup Kumar Bhaskarapillai, IGCAR Campus, Kalpakkam, Can Chitosan be of Any Use to Nuclear Industry?

•Dr Amit Kumar, Indian Institute of Technology, Patna, Constrained Bicyclic Molecules as Glycosidase Inhibitor

•Dr Mary Saral, VIT, Vellore Extraction and purification of polysaccharides from the fruits of pithecellobium dulce

•Dr R. Gopinath, University College Engineering, Tindivanam, Evaluation of mechanical properties of hybrid fiber reinforced vinyl ester composite

Technical Session X: T-10 Carbohydrate Linked Industries: Status and Scopes (Coordinator: Dr Ashish Kumar Sen, IICB, Kolkata)

Panel Discussion session & Open Interaction:

Members: Prof Ashok K. Prasad, University of Delhi, Prof Ghanshyam S. Chauhan, Himachal Pradesh University, Dr. Vineet Kumar, Forest Research Institute (FRI), Dehradun, Dr Bharat Joshi, PFP Technologies, USA, Dr Sanjay Modi, Lucid Colloids Ltd., Mumbai, Mr A. Saravanan, Thirumalai Chemicals Ltd. Ranipet, Dr Subodh Sharma, India Glycols Ltd., Dehradun.

Apart from technical sessions, there was poster presentations on the second day lunch time and 35 different posters were presented. During Valedictory functions, different participants from various part of India thanked organizers for successful completion of 30th Carbohydrate conference. Winners of top three posters presented during the valedictory function. The conference ended with the vote of thanks by Dr P.L. Soni.

Prof Tharanikkarasu Kannan
Organizing Secretary, CARBO - XXX

ASSOCIATION OF CARBOHYDRATE CHEMISTS & TECHNOLOGISTS (India)
EXECUTIVE COMMITTEE MEMBERS (2015)

CHIEF ADVISOR:

Dr P. L. SONI

EDITOR-IN-CHIEF, e-TCR & Science Advisor
Carbohydrate Polymer Natural Product and Non-wood
Produce Utilization
Forest Research Institute, Dehra Dun - 248006.
E-Mail: soniplin@yahoo.co.in, Ph.: 0135-2773736

ADVISOR:

Dr ASISH K. SEN

Department of Chemistry (Carbohydrate)
Indian Institute of Chemical Biology, Kolkata-32
E.mail: aksen@iicb.res.in / asihsksen@yahoo.com
Ph. (O) 033-473-3491/0492, Extn. 720
® 033-422-6623; (M) 09433068074;
Skype: asish.kumar.sen.iicb

PRESIDENT (ACADEMIC):

Prof K. P. R. KARTHA

Professor, Department of Medicinal Chemistry,
National Institute of Pharmaceutical Education &
Research
Sector 67, S.A.S. Nagar (Mohali) 160062
E-mail: rkartha@niper.ac.in. Ph: +91(0)-172-214682

VICE PRESIDENT (ACADEMIC):

Prof NAVEEN K. KHARE

Chemistry Department,
University of Lucknow,
Lucknow-226007, Uttar Pradesh
E-mail: nkhare58@gmail.com
Mobile: +919415006072

VICE PRESIDENT (INDUSTRY):

Mr UDAY MERCHANT

Lucid Colloids, Mumbai

Hony. SECRETARY:

Prof ASHOK PRASAD

Department of Chemistry, University of Delhi,
E-mail: ashokenzyme@yahoo.com. Ph. (O) 011-
27662486, Mobile: +91-9818131666

Jt. SECRETARY:

Dr VINOD K. TIWARI

Department of Chemistry, BHU, Varanasi-221005
E-mail: tiwari_chem@yahoo.co.in
Mobile: +91-9451896061

TREASURER:

Dr AMIT BHATT

Assistant Professor
DIT University,
Dehra Dun-248006, Uttarakhand, India

EXECUTIVE MEMBERS:

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N.I.I., New Delhi

Dr SANJAY K. MODI

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E-mail: tiwari_chem@yahoo.co.in

OPENING CEREMONY OF CARBO XXX AT PONDICHERRY UNIVERSITY



LAUNCHING OF ABSTRACT BOOK OF CARBO-XXX AT PONDICHERRY UNIVERSITY





HONOURS / AWARDS



Dr Vasudeva Singh, Former Head & Chief Scientist (Retd), Professor (AcSIR) from CFTRI, Mysore is now Emeritus Medical Scientist (ICMR) at Department of Food Science and Nutrition, University of Mysore,

Manasa Gangotri, Mysore-570005. At present he is working as a Chairman of Scientific Panel on Cereals, pulses and products including bakery, FSSAI, FDA Bhavan, New Delhi. Dr Singh is nominated as Member of Scientific Panel on Food Contaminants as well Scientific Committee, FSSAI, FDA Bhavan, New Delhi.

ACCTI Best Thesis Award-2014, and 2015



Dr Swati Jadhav got best thesis award-2015 for the thesis titled "Enzyme-polysaccharide interactions: Effects on enzyme activity and stability". The work was performed under the guidance of Prof. Rekha Singhal at Institute of Chemical

Technology, Mumbai. The research was focused on the possible covalent and non covalent interactions of enzyme with polysaccharides and to explore the benefits of interactions for industrial applications. This work highlights the variety of results obtained after interactions of different enzymes with different polysaccharides. Scientific and logical reasoning behind the variety of results and appropriate industrial application could help to make 9 international publications out of this work.



Dr Vivek Sharma got the best thesis award for year 2015 at CARBO XXX held at Pondicherry University from December 29-31, 2015. Dr. Sharma is currently working as Post doctorate fellow at RNA Therapeutics Institute, University of Massachusetts Medical

School Worcester, MA 01605, USA. He did his PhD under the kind supervision of Prof Ashok Prasad from Delhi University. He says that : I am grateful to ACCT(I) India for rewarding our research work as Best Thesis Award. I owe special homage to Prof Ashok Prasad for introducing me to the field of carbohydrate and nucleoside chemistry. I am also thankful to my labmates and the ACCT(I) members, especially, Dr PL Soni, Dr Vinod Tiwari and Dr Sunil Singh whose constant encouragement was vital.

List of newly joined ACCTI Life Members

Dr Perali Ramu Sridhar (LM/267/15)
Asst. Professor, School of Chemistry
University of Hyderabad, Hyderabad-500046
Email: p_ramu_sridhar@uohyd.ac.in

Mr Mana Mohan Mukherjee (LM/268/15)
Research Scholar, Jadavpur University, Jadavpur,
Kolkata-700032
Email: manmohan.3275@gmail.com

Ms Pooja Kumari (LM/269/15)
SRF, Institute of Genomics & Integrative Biology
Mall Road, New Delhi-110007
Email: pooja.kumari@igib.in

Ms Rupsi Kharb (LM/270/15)
SRF, Institute of Genomics & Integrative Biology
Mall Road, New Delhi-110007
Email: rupsi.kharb@igib.in

Ms Ankita Sharma (LM/271/15)
SRF, Institute of Genomics & Integrative Biology
Mall Road, New Delhi-110007
Email: ankita.sharma@igib.in

Mr Sumanta Kumar Ghosh (LM/272/15)
Research Scholar, Deptt. of Chemical Technology,
University of Calcutta
Email: sumantakumarghosh99@gmail.com

Dr Ramendra Pratap (LM/273/15)
Asst. Professor, Department of chemistry
University of Delhi, North Campus, Delhi-110007
Email: ramendrapratap@gmail.com

Dr B.K. Singh (LM/274/15)
Asst. Professor, Department of chemistry
University of Delhi, North Campus, Delhi-110007
Email: singhbk@chemistry.du.ac.in

Ms Nidhi Mishra (LM/275/15)
Research Scholar, Dept of Chemistry, Institute of Science
Banaras Hindu University, Varansi
Email: mishranidhi04@gmail.com

Mr Anoop Shyam Singh (LM/276/15)
Research Scholar, Dept of Chemistry, BHU, Varansi
Email: anoopshyambhu7@gmail.com

Mr Kamalraj (LM/277/16)
Research Scholar, Dept of Chemistry,
Pondichery University, Pondichery
Email: kamalrajernesto@gmail.com

Ms Pallavi Dubey (LM/278/16)
Research Scholar, Chemistry Department
Forest Research Institute, Dehradun
Email: pallavidubey127@gmail.com

Ms Kanika Ghosh (LM/279/16)
SRF, University of Burdwan
Email: ghosh.kanika7@gmail.com

Dr Sayani Ray (LM/280/16)
PDF, University of Burdwan
Email: ray_sayani1988@yahoo.co.uk

Mr Kaushik Bera (LM/281/16)
JRF, University of Burdwan
Email: kaushik88.chem@gmail.com

Mr Wasim Raja (LM/282/16)
SRF, University of Burdwan
Email: wasim.raja89@gmail.com

Dr Shuchi Singh (LM/283/16)
Postdoctoral Fellow, Dept of Chemical Engineering
Indian Institute of Technology Kanpur
Email: shuchis@iitk.ac.in

Mr Vikky Rajulapati (LM/284/16)
Research Scholar, Dept of Biosciences and
Bioengineering, IIT Guwahati
Email: r.vikky@iitg.ernet.in

Dr Ram Sagar Misra (LM/285/16)
Department of Chemistry, School of Natural Sciences,
Shiv Nadar University, Greater Noida, UP, 201314
Email: sagar77misra@gmail.com

Mr Narender Yadav (LM/286/16)
Ph.D. Scholar, Dept of Medicinal Chemistry, Niper,
Sector-67, Sas Nagar, Punjab, 160062
Email: narenderyadav30@gmail.Com

Mr Rajesh Gour (LM/287/16)
Ph.D. Scholar, Dept of Medicinal Chemistry, Niper,
Sector-67, Sas Nagar, Punjab, Pin Code: 160062
Email: rajeshgour42@gmail.Com

Mr Santosh Kumar Giri (LM/288/16)
Ph.D. Scholar, Dept of Medicinal Chemistry, Niper,
Sector-67, Sas Nagar, Punjab, Pin Code: 160062
Email: skgiri@niper.ac.In

ACCT(I) National and International Carbohydrate Conferences

- | | |
|---|---------------|
| 25. CARBO-XXV: Himachal Pradesh University, Shimla | (2010) |
| 26. CARBO-XXVI: CSIR-Indian Institute of Chemical Biology, Kolkata | (2011) |
| 27. CARBO-XXVII: CSIR-Central Food Technological Research Institute, Mysore | (2012) |
| 28. CARBO-XXVIII: ACCTI at Hotel Sunpark Inn, Dehradun (1 st International Conference) | (2013) |
| 29. CARBO-XXIX: Center of Innovative and Applied Bioprocessing, Mohali | (2014) |
| 30. CARBO-XXX: University of Pondicherry, Pondicherry | (2015) |
| 31. CARBO XXXI to be held at University of Delhi (2nd international conference) | (2016) |
| 32. CARBO-XXXII: to be held at... | (2017) |

Note: From CARBO-I to CARBO-XXIV please see previous year Carbohydrate News Letter (CNL-2015)

ACCTI YOUNG SCIENTIST AWARDS- 2015

To encourage young students, the Association of Carbohydrate Chemists & Technologists (India) gives cash award of Rs. 5000.00 (Rupees Five Thousands only) and a citation for the best oral/poster presentation at the 'Carbohydrate Conference' every year. Only research scholars, research associates etc. (below the age of 30) are eligible for this award.

At the XXXth Carbohydrate Conference held at Pondicherry University from December 29-31, 2015, paper entitled "Synthesis of the Cap tetrasaccharide related to *Leishmania donovani* LP" authored by Mana Mohan Mukherjee, Nabamita Basu, Rina Ghosh, was selected as the best poster. The paper entitled "Development of Glyco bis-peptide Cationic amphiphiles for Antileishmanial Activity" authored by Balram Singh and Ashok K. Prasad was also judged as another Best Poster Presentation. We express our heartiest congratulations to Mr. Mana Mohan Mukherjee and Mr. Balram Singh.



Mana Mohan Mukherjee is working as Senior Research Fellow (SRF) under the guidance of Prof Rina Ghosh at Department of Chemistry, Jadavpur University, Kolkata on the topic "Oligosaccharide Synthesis and Development of New Synthetic Methodologies in Carbohydrate Chemistry". His passion

parts of our country with his DSLR camera. His favorite one is landscape photography of sun set. His dream is a pollution free green world so that we can breathe fresh and I can capture more clear photographs. In his words, "I am the master of my mind and captain of my soul".



Balram Singh completed his BSc and MSc from Hindu College, DU and then joined PhD under the guidance of Prof Ashok K. Prasad. His area of research is "Development of Carbohydrate based cationic amphiphiles for biomedical applications."

LUCID COLLOID AWARD-2015

To encourage research on hydrocolloids, Ms. Lucid Colloids Limited, Mumbai, offers a cash award of Rs. 5000.00 (Rupees five thousand only) and a citation for the best paper presentation on hydrocolloids since 2003. At the XXXth Carbohydrate Conference held at Pondicherry University from December 29-31, 2015, paper presentation entitled "Developing Beta Cyclodextrin Based Sensors For Early Detection Of Alzheimer's Disease" by **Shri Ram Kishore** (PhD Mentor: Prof Tharanikkarasu Kannan, Pondicherry University), got this award. We express our heartiest congratulation for him.

THE ABSTRACTS OF YOUNG SCIENTIST AWARDEES AT CARBO XXX

Synthesis of the Cap tetrasaccharide related to *Leishmania donovani* LPS

Mana Mohan Mukherjee, Nabamita Basu, Rina Ghosh*

Department of Chemistry, Jadavpur University, Kolkata 700032;

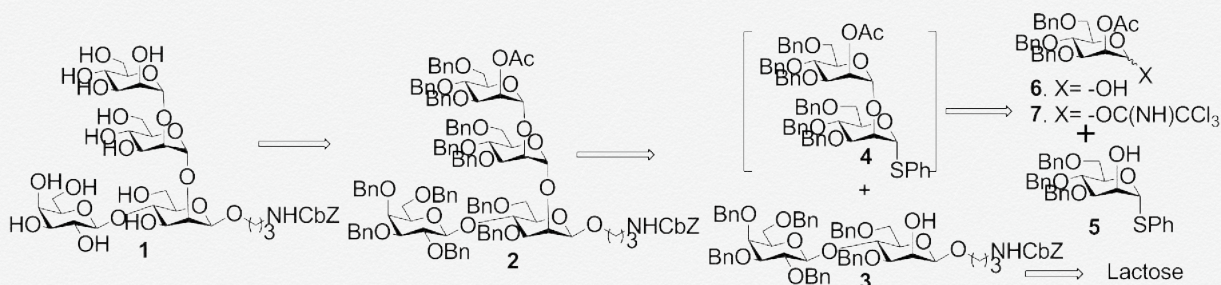
email: ghoshrina@yahoo.com

The visceral form of leishmaniasis is caused by parasite *Leishmania donovani*, results in swelling of liver and spleen and often lethal without treatment.¹ Expedient syntheses of the tetrasaccharide cap related to the lipophosphoglycan of *Leishmania donovani* from two monosaccharides and a disaccharide building blocks were achieved by one-pot sequential glycosylation reactions. The monosaccharide building

blocks were synthesized from D-mannose and the disaccharide building block was prepared from lactose by C2-epimerisation of its glucose unit through C2 hydroxy oxidation followed by stereoselective reduction procedure.

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Development of Glyco bis-peptide Cationic amphiphiles for Antileishmanial Activity

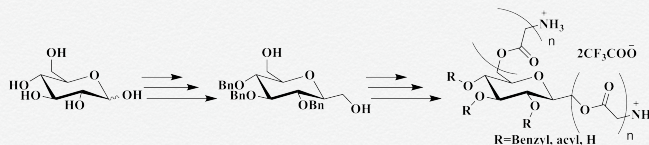
Balram Singh and Ashok K. Prasad*

Bioorganic Laboratory, Department of Chemistry, University of Delhi, Delhi-110 007

email: ashokenzyme@gmail.com

Cationic amphiphiles contain positively charged amino functions define a structurally diverse class of antibacterial, antimicrobial, and antiprotozoal with broad spectrum activity and different mode of action. It is generally believed that the amphiphilic topology is essential for insertion into and disruption of cytoplasmic membrane. In the present work, we have prepared a novel class of cationic amphiphiles termed as Glyco bis-peptide which has been decorated with hydrophobic residue in the form of long chain acid, peptide chains as hydrophilic domain connected via sugar molecule. Owing to the presence of cleavable ester moiety, these new amphiphiles are hydrolysed spontaneously at physiological conditions. This property enables them to be readily metabolised and therefore, they have potential to be superior antibacterial, antimicrobial, and antiprotozoal. The

synthesized analogs were evaluated for In-vitro antileishmanial activities. The screened molecules show promising results, thus proving as good scaffolds for the synthesis of different antileishmanial agents.



Scheme 1: Synthesis of glycine loaded Glyco bis-peptide amphiphiles

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Developing beta cyclodextrin based sensors for early detection of Alzheimer's disease

Taniya Adak, Ram Kishore, Tharanikkarasu Kannan*

Department of chemistry, Pondicherry University, Puducherry-605014

email: tharani.che@pondiuni.edu.in

Plasma amyloid- β oligomers level is a biomarker for Alzheimer's disease diagnosis¹. It has been previously shown that Curcumin, a fluorescent dye, bind AB oligomers and fluorescence analysis revealed a significant increase in the fluorescence of Curcumin², suggesting this potential interaction could be used to make a sensor. In this study, we aim synthesise water-soluble β -cyclodextrin (β -CD) linked Curcumin as the sensor and study its efficacy in the presence of KLVFFA sequence motifs which have been identified as particularly aggregation-prone based on a number of studies³ on AB protein. β -CD was functionalized selectively on one hydroxyl group to have azide and the Curcumin is proposed to be functionalized to contain a

propargyl group, in order to link them via click reaction. Hypothetically, part of Curcumin could encapsulate itself in the hydrophobic cavity of β -CD and in the presence of KLVFFA sequence motifs, Curcumin could come out of the hydrophobic cavity of β -CD and bind strongly to AB peptide with a significant increase in fluorescence.

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We have also decided to select one best paper per volume which has very high standard, for award of Rs. 30,000 (US \$ 400) along with the certificate from the journal to this effect starting from the Silver Jubilee year of the ACCTI at the annual conference of carbohydrate from CARBO XXV, Shimla. The first e-TCR awardee was Dr R. P. Tripathi, Senior Scientist, Central Drug Research Institute, Lucknow. Prof Ghanshyam Chauhan received the second e-TCR award at CARBO XXVI at IICB, Kolkata. The third e-TCR award has been given to Prof Ashok Prasad, Delhi University at CARBO XXV at CFTRI Mysore. The 4th TCR Awards has been given to Prof Darren Grice, Griffith University, Australia at 'ACCTI International Conference on Challenges in Chemistry and Biology of Carbohydrates' held at Dehradun during 20-22, January, 2014. From 5th year award money has been increased to 30,000/ which would sponsor by PFP technology, USA. Recently the 5th TCR Awards has been given to Prof C P Rao, IIT Bombay.

The 6th TCR Awards has been given to Prof Indrapal Singh Aidhen, IIT Madras. Title of 6th e-TCR Paper Award is: Acyl-Anion Chemistry for the Synthesis of C-Aryl Glycosides: Synthetic Efforts Towards C-Aryl Septanositides, *Trends In Carbohydrate Research*, Vol.6, No.4 (2014) 37-46

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The overall aim of the TCR is to advance and disseminate knowledge in all related areas of carbohydrates to benefit the whole carbohydrate's community. It offers an international forum for exchange of latest research and developments related to various scientific and technological aspects of carbohydrates and publish original research in form of normal length research papers, short reports, review articles in the following facets lie well within the scope of this journal.

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Editor-in-Chief, TCR



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SUNCOS-PG	Cationic Guar Gum	Paper & Pulp Industry
SUNCOS-CG	Cationic Guar Gum	Cosmetic & Personnel Care Industry
SUNTECH	Technical Grades of Guar Gum Powder	Oil Well Drilling, Mining & Explosives
SUNTEX	Chemically Modified Derivatives of Guar, Tamarind and Starch	Textile Industry

Contact details:

E-394, MIA, Phase-II, Basni, Jodhpur-342005, Rajasthan (INDIA)

Phone: +91-291-2740075 / 2740270; Fax: +91-291-2740867

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