

CARBOHYDRATE NEWS LETTER

Issue : 3 June 2000

Editor

Dr. Asish Kumar Sen (Jr.)
Head, Dept. of Organic Chemistry (Carbohydrate)
Indian Institute of Chemical Biology, Calcutta 700 032
Telephone : 473-3491, 3493, 0492, 6793, Extn. : 120
Fax : (033) 473-0284, 0350, 5197
E-mail : aksen@icb.res.in
asishksen@hotmail.com

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From the Editor's Desk

Dear Friends and Colleagues,

The Carbohydrate News Letter was started with an objective of bringing together scientists from various disciplines, industrialists and technologists. At the XIV Carbohydrate Conference held at IIT Madras, Chennai, it was clear that CNL had achieved its goal. A large number of participants from chemistry, biochemistry, medicine etc., and also from various industries participated in the conference to make it a grand success. Our congratulations to Dr. D. Loganathan and Dr. Indrapal Singh Aidhen, the joint convenors of the conference, for their excellent effort.

Now, it is time to improve the quality of the CNL. With your help, suggestions and criticism, I am sure CNL will be a big success and will be able to serve the needs of carbohydrate chemists, biochemists and technologists in India.

The strength of an organization definitely lies on its members who form the pillars of the organization. Let me inform you that nearly 150 scientists and technologists participated in the Carbohydrate Conference, but, the number of members is still not satisfactory. In the last annual G. B. meeting there was a proposal that every member could introduce two new members. We would highly appreciate such an effort and look forward to it. Although, we were forced to increase the membership fee after 10 odd years, I am sure it won't be a bar. An application form is attached for this purpose.

We are sincerely trying to build up a membership list. In this issue, you will find a list of members. If, in case, your name is missing from the list please inform us. Please fill up the form provided at the back of the membership form to update the present membership list. Any inconvenience regarding this is highly regretted.

From this issue onwards we have included a new column "Institutions and Industries". The other features however, remain the same.

As per existing rules of the ACCT(I), the election of the office bearers is held every two years. The election for the period 2000-2002 will be held at the annual General Body meeting during the forthcoming XV Carbohydrate Conference. Please send in your nomination (details inside). The next Carbohydrate Conference will be held at Sardar Patel University, Vallabh Vidyanagar, Gujrat. All are requested to attend the conference.

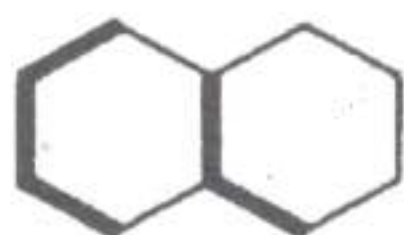
Finally, I thank the members of the editorial board and the companies for their active support through advertisements. In the new millennium, the CNL appears with a new look. Hope you like it. Although late, on behalf of CNL and the ACCT(I), I wish you prosperity and happiness throughout the year.

Asish Kumar Sen

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XV Carbohydrate Conference

(October 16-17, 2000)

FIRST CIRCULAR

XV Carbohydrate Conference will be organized under joint auspices of the Association of Carbohydrate Chemists and Technologists, India [ACCT(I)] and the Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar, Gujarat, during October 16-17, 2000. Organising Carbohydrate Conferences has been an annual activity of ACCT(I), in collaboration with Universities and premier research institutes of India, since 1984. Thus fourteen conferences have so far been held at different places, spread all over India. While the XIV Conference was held in December 1999, at the Department of Chemistry, Indian Institute of Technology, Madras, Sardar Patel University, has the honour of hosting the conference for the second time. Earlier, the X Conference was held at Sardar Patel University in 1995.

The purpose of organizing these conferences, has been to provide a common platform to scientists and industry for exchange of views, technical information and developments in carbohydrate related fields. The conferences have been widely attended by academicians, technologists and representatives of industry, with a common interest in carbohydrate related research and development programmes.

Presentation at the XV Conference shall cover developments in all aspects of carbohydrates i.e. industrial polysaccharides, carbohydrate synthesis and structure, biochemistry and biotechnology of carbohydrate related field and applications of carbohydrates in food and feed, textile and paper, oil field, pharmaceuticals, drugs and down stream products based on carbohydrates. ACCT(I) started Young Scientists Award and Citation with effect from XIII Conference in 1998. The awards of the XIV Conference shall be given at this conference.

Research papers, plenary lectures and invited lectures by experts in various fields, open house discussion and annual meeting of ACCT(I) shall be the main attractions of the conference. I would like to invite you and your colleagues to attend the XV Carbohydrate Conference at Vallabh Vidyanagar. You are requested to contact Dr. H.C. Trivedi Professor & Head, Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar – 388120, Gujarat for further information and second circular.

Telephone Nos. 02692 – 35416 Ext.275 & 277 (Office); 02692 – 36739 (Residence); Fax No. 02692 – 36475; E-mail : root@patel.ernet.in

Dr. N. K. MATHUR

Need for development of innovative and relevant technologies for less organised polysaccharide industries*

N. K. MATHUR

The XIV Carbohydrate Conference under the joint auspices of the Association of Carbohydrate Chemists and Technologists India, and the IIT Madras was organised at Chennai on December 16-17, 1999. The theme of the Conference was "Carbohydrate Research at the interface of Chemistry, Biology and Medicine : Emerging Trends". The theme of the conference was aptly chosen because the southern states in India have a large base of carbohydrate related research in the fields of chemistry, biology and medicine. The southern states are also rich in sources for industrial polysaccharides i.e. tamarind, chitin, seaweeds, and tuber starch to name a few.

ACCT(I) had earlier organised conferences in Karnataka at the CFTRI, Mysore (III Conference in 1987), in Andhra Pradesh at IICT, Hyderabad (VI Conference in 1990) and in Kerala at the RRL Trivendrum (VIII Conference 1992). This is a very happy occasion to have this XIV Conference at the IIT Madras, Chennai in 1999. Incidentally, this happens to be the fortieth anniversary year of IIT Madras, which itself is an advanced centre for carbohydrate related research.

* Based on the Presidential talk given at the XIV Carbohydrate Conference held at IIT-Madras on December, 16-17, 1999.

North India has traditionally been a centre for processing polysaccharide gum e.g. guar gum. Recently there has been an unusual increase in the price of galactomannan gum from guar seeds with the result that some other polysaccharides e.g. dencha and *Cassia tora* galactomannans and tamarind kernel powder (TKP) have become partial replacements of guar gum in some non-food applications. This, over all is a good sign. The guar gum export units in north India have been receiving enquires about these other polysaccharide products. Due to this, some guar gum units are now dealing with more than one gum or in other words, they have become multi-hydrocolloid industries.

Being from a gum-processing region, I am familiar with the problems and requirements of this industry. Unlike the carbohydrate-based industries of organised sector e.g. sugar, starch, paper and cotton textile (Cellulose), gum industries are confined to small and medium scale sectors. These industries do not have in-house R&D facilities. Some times, they even lack quality control facilities and yet they are in export business. These industries thrive on their small secrets, which they are not prepared to share with others including experts and consultants. This view was expressed recently at an APEDA Seminar held at Jodhpur on the problems of guar gum industry. However, these industries have welcomed the idea of establishing a third party testing facility.



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These industries need certain relevant and innovative technologies rather than standard ones, which can only be visualised by a person closely familiar with their working. The resource they have for a developing project is also limited. Thus, it is not possible for these industries to finance certain R&D projects on the terms currently prevalent in CSIR and other research organisations.

To help these industries has been one of the primary aims of ACCT(I), while the other objective has been to bring together the researchers, academicians and technologists together on a platform, so that they can understand each others' problems and work. I am happy to see that largely this objective has been fulfilled and we have witnessed diverse carbohydrate related fields being presented on a common platform. On behalf of ACCT(I) and its office holders, I welcome you all on this occasion and I sincerely hope that all of you shall be highly benefitted by attending this conference. We are thankful to the organisers from the IIT Madras for the nice arrangements made. We also thank the funding agencies for the liberal funds provided to make this event a success. I hope we will have many more occasions to meet in the forth-coming conferences to share even greater exchange of views for mutual benefit.

Minutes of the Annual General Body Meeting of the Association held at IIT Madras, Chennai, 16th December, 1999.

The President, Prof. N. K. Mathur presided over the meeting and welcomed all the members.

The Secretary, Dr. P. L. Soni then placed the minutes of the annual G. B. meeting held at Dehradun, 1998 which was accepted unanimously. The report was accepted by Dr. V. P. Kapoor and seconded by Dr. A. K. Lodha. The secretary also read out the activities of the Association and report of the panel discussion (published in issue-2 of CNL).

In the absence of the Treasurer, Dr. P. L. Soni placed the audited accounts of the Association. He mentioned that Dr. Gharia, ex-treasurer had transferred all money (Rs. 21,605.35) from the old account (at Ahmedabad) of the Association. Also, entire savings of the XIII Carbohydrate Conference held at Dehradun was transferred to the Association accounts by Dr. P. L. Soni which was highly appreciated by the members. Presently the Association has Rs. 91, 712.33 in its bank account. The accounts was accepted by Mr. Champalal and seconded by Mr. P. K. Hissaria.

Dr. Soni welcomed ten new Ordinary members, 16 new Life members and one Institutional member.

Dr. Indrapal Singh Aidhen pointed out that although many people attended the conference, the number of members are strikingly low. He suggested that special drive should be given to increase the number of members which will strengthen the Association. Dr. Soni felt that Association should have competent people from both industry and academicians with solid back ground.

Dr. P. L. Soni then placed a list of members since 1991, as the original list of members since inception of the Association at Ahmedabad is not available. He regretted any unintentional omissions. In such case, the concerned member was requested to contact Dr. A. K. Sen or Dr. P. L. Soni for inclusion of his name.

Dr. A. K. Lodha requested to publish the present list of members in CNL with telephone numbers. Dr. A. K. Sen replied that the list could be published in CNL but the telephone Nos. were not available. Interested persons could contact Dr. Sen or Dr. Soni for corresponding address.

The members then discussed the membership fee structure which has not been changed for last ten years. All the members felt that the membership fee should be increased but differed in opinion about the amount. However, the new membership rate as given in the membership form was accepted by the members.

There was a serious discussion about the publication of a Journal of the Association. After a thorough discussion, the house felt that it was not the time to launch a new journal and decided to consider the issue again after 3 years. They, on the contrary, suggested to strengthen CNL. Dr. A. K. Sen replied that only very few members have shown active interest about CNL and requested all the members to come forward with information, suggestions and matters for publication in CNL. Without this support it would be extremely difficult to improve the quality of CNL.

The members expressed there satisfaction about CNL but urged to improve the quality. After some discussion, the advisory board of CNL was restructured.

As decided at the Dehradun conference, this year there were no scope for the formation of new executive committee.

Members discussed about the possibility of conducting an International Conference in India. Dr. A. K. Sen expressed his willingness to arrange the conference at Calcutta. Dr. Surolia said that he would arrange a Glycoconjugate Symposium in 2003 in Bangalore. Members felt that the International Carbohydrate Conference may also be arranged in the same year, but no definite decision was taken.

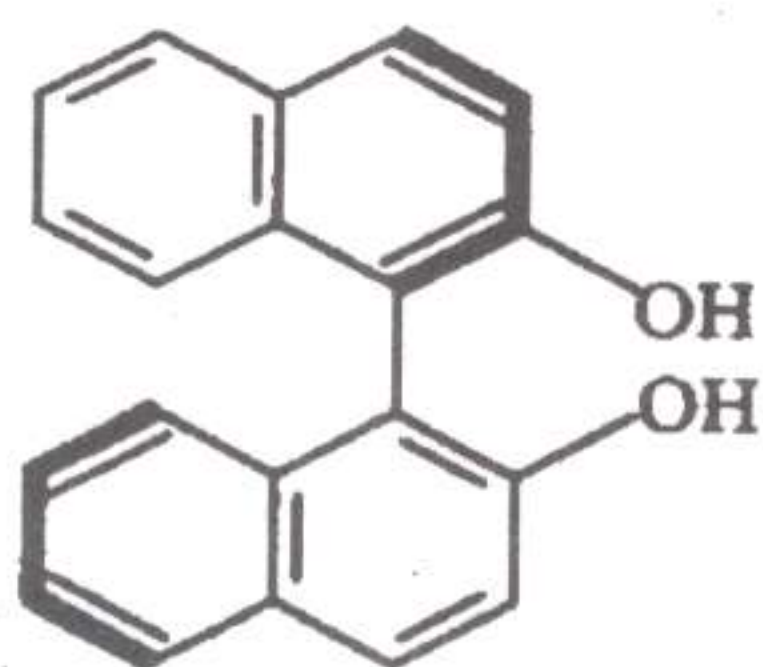
Dr. H. C. Trivedi expressed his willingness to hold the next Carbohydrate Conference at the Sardar Patel University, Vallabh Vidyanagar, Gujrat, which was accepted by the members.



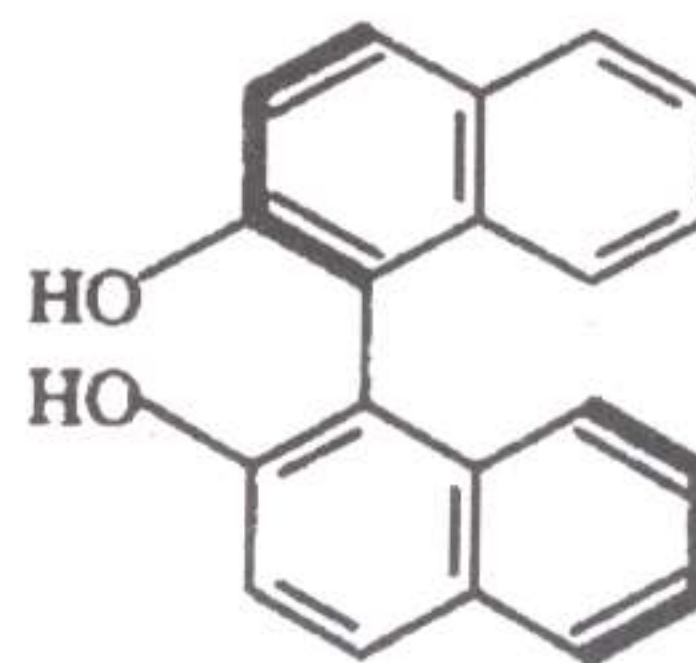
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News items, about meetings, positions available, your comments, review articles (2-3 pages), scientific matters etc.

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1999-2000 MEMBERSHIP LIST

I take this opportunity to welcome new members. Due to unavailability of the original membership list, a new membership list of the Association of Carbohydrate Chemists and Technologists (India) has been prepared and is as follows. If you are a member but your name is not in the membership list, please fill up the back side of the membership form and send it to the Secretary, Dr. P. L. Soni, so that your name is enlisted. We regret any inconvenience.

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Dr. Manisha Guha, CFTRI, Mysore.
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Prof. D. Loganathan, IIT Madras, Chennai.
Dr. Vineet Kumar Madan, FRI, Dehradun.
Dr. P. N. Mathur, Jodhpur.
Prof. N. K. Mathur, Jodhpur.
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Dr. Arun Sethi, Lucknow University, Lucknow.
Dr. Vasudeva Singh, CFTRI, Mysore.
Dr. P. L. Soni, FRI, Dehradun.
Mr. B. Toh, RRL, Jorhat.
Dr. Y. C. Tripathi, AFRI, Jodhpur.

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Dr. Amit Bhatt, Dehradun.
Dr. Partha Chattopadhyay, IICB, Calcutta.
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Young Scientist Award

It was decided at the XIII Carbohydrate Conference 1998, Dehra Dun, that a cash award and a citation would be presented to the best oral/poster presenter at the carbohydrate conferences. Only scholars, research associates etc. (below age 30) will be eligible for this award.

At the XIV Carbohydrate Conference, two poster presentations were judged for the award. Our heartiest congratulations to Mr. Ganesh A. Thakur and Mr. Balaram Mukhopadhyay.



GANESH THAKUR is a research student (UGC scholar) at the University Department of Chemical Technology, Mumbai, since July 1995 under the able guidance of Prof. K. G. Akamanchi. He is working in the field of oligosaccharide synthesis of bioactive molecules and novel methodologies for carbohydrate transformations.

Born in January 1973, Ganesh graduated from R. Ruia College, Mumbai in 1993 and obtained his master's degree in Chemistry from IIT, Mumbai in 1995.

In addition to his research interest he is also deeply interested in classical music and yoga.



BALARAM MUKHOPADHYAY is a research student in the Department of Biological Chemistry, Indian Association for the Cultivation of Science, Calcutta-700 032 since March 1997. His primary field of work is the synthesis of some complex oligosaccharides related to the O-antigens from *Shigella dysenteriae* type-4 and *Shigella boydii* type 5, under the supervision of Professor Nirmolendu Roy.

Born in January 1973, Balaram secured 1st class in B.Sc. from Bankura Christian College in Chemistry in the year 1994. He completed his master's degree in Organic Chemistry from Burdwan University in 1996.

Awards

Dr. Purshottam L. Soni, Scientist and head, Chemistry Division, Forest Research Institute, Indian Council of Forestry Research & Education, Dehradun, received VISHISHT VAIGYANIK PURASKAR 1997-98, awarded by the Ministry of Environment & Forest, Government of India, in recognition of his outstanding contribution to the development of forest derivatives which has led to not only substantial incomes from hitherto untapped and unknown sources, but also resulted in eliminating threats to certain species which were endangered owing to over exploitation. His notable contributions include the development of substitutes for 'Jigat', barks & powder of *Machilus macrantha*

and *Litsea chinensis*, development of processing and purification of Gum ghatti, an exudate of *Anogeissus latifolia*, process to change the (+) isomer present in *Catechin* to (-) isomer, and preparation of industrial gum from *Cassia tora* seeds.

The award was given away by Honorable Prime Minister of India, Sri A. B. Vajpayee on Environment Day i.e. 5th June 1999.

Professor B. P. Chatterjee has been elected Fellow of the National Academy of Science Allahabad, 1999.

Visit Abroad

Dr. N. K. MATHUR, retired Professor of Chemistry JNV, University Jodhpur and President Association of Carbohydrate Chemists and Technologists (India), attended the 18th Annual Conference of International Aloe Science Council (IASC), held at Dallas (Texas, U.S.A.) in August, 18-22, 1999. Though the medicinal property of aloe polysaccharide (Acetylated Glucomannan) is well known in ancient systems of medicine, there has been a renewed interest in application of aloe vera gel in cosmetics and health food during the past two decades. IASC is an organisation of the industries involved in use of aloe gel. It is also concerned with certifying the authenticity of aloe containing formulations and promotion research and developments related to aloe based products. Certain cosmetic industries in India are using aloe in their formulations but stabilised aloe gel is not yet produced in India. Studies on structure-activity of aloe polysaccharide is not clear to explain its observed beneficial effects in cosmetics and health products. It is hoped that professor Mathur's interest in this field shall benefit aloe-using industries in India.

Dr. P. L. SONI visited Europe on study tour from 31.5.99 to 19.6.99.

Announcement

To celebrate the 60th birthday of **Prof. K. K. Balasubramanian**, Dept. of Chemistry, IIT-Madras, Chennai, a Symposium and a felicitation function will be held during the first weekend of September 2000 at the IIT campus, Chennai. The speakers will mostly be his former students, colleagues and leading scientists with common research interest.

All interested persons are requested to contact Dr. R. Sankara Subramanian, Secretary, Organising Committee.

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Degree/Diploma	Institution/Univ.	Specialization	Year of passing
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Kindly send your subscription by D.D. or M.O. along with duly filled Membership form on or before 30th September for the Year 2000-2001, to the Hon. Secretary, Dr. P. L. Soni, Scientist-SF, Head, Chemistry Division, Forest Research Institute, P.O. New Forest, DEHRADUN - 248 006, U.P.

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If not: **Please become a member of the Association. A membership form is attached for this purpose.**

Please mail this form to the Hon. Secretary, Dr. P. L. Soni, Scientist-SF, Head, Chemistry Division, Forest Research Institute, P.O. New Forest, DEHRADUN - 248 006, U.P.



Join ACCT(I)



NOMINATIONS FOR OFFICE BEARERS

Nominations are invited from the members of the Association for the election of Office Bearers (President, Vice-president, Secretary, Joint Secretary, Treasurer, and six Executive members) for the year 2000-2002. The election will be held at the annual General Body meeting at the forthcoming XV Carbohydrate Conference at the Sardar Patel University, Vallabh Vidyanagar. In this regard kindly refer to the bye-law 7 (amended at the AGB meeting at Dehradun) of the Association (published in Issue-2 of CNL)

The candidate and the proposer should be a valid member of the Association and the proposal should be made in the following format:

Date:.....

I propose(name and affiliation)..... as an office bearer of the Association for the period 2000-2002 in the post of(name of the position).....

Name, affiliation, signature with date of the proposer.

I agree with the above proposal.

Name, affiliation, signature with date of the candidate.

Nominations in plain paper may kindly be sent to the Secretary, Dr. P. L. Soni, Scientist -SF, Head, Chemistry Division, Forest Research Institute, P.O. New Forest, DEHRADUN, U. P.-248 006, on or before 15th September, 2000.

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Indian Gum Industries Ltd., Jodhpur Business Division (Lucid Group) gets ISO 9001:1994 certification, after successful auditing by Bureau Veritas Quality International (BVQI) and on its recommendation for certification of ISO 9001:1994. The scope of supply is for design manufacture & supply of guar gum and other hydrocolloids, including their derivatives for application in food, feed, pharma, personal care products, oil/gas/well drilling/fracturing, explosives, mining, paper, paint, textile/carpet industry and other industrial applications. The certification include accreditation from certified agencies for UK (VKAS), USA (RAB) and Germany (TGA).

Indian Gum Industries Ltd., (Jodhpur) is the first Indian polysaccharide based industry to have incorporated HACCP system in their production and ISO quality system procedure. It is first ISO 9001 certified company among guar gum manufacturing units in India.

Forest Research Institute, Dehra Dun

An organised research in forestry and forest products was started in 1906 with the inauguration of the Imperial Forest Research Institute at Dehra Dun. The present building of the Forest Research Institute was built in estate covering approximately 520 hectares, about 6 km from Dehra Dun city. The impressive building was constructed at the foot of the Himalayas with the full view of Mussoorie, the most beautiful hill station of north India. This building is about 273 meters long and has a plinth area of 2.5 ha. The Institute has 11 Divisions and has been accorded the status of Deemed University in 1992. Thrust areas of Forest Research Institute are :

- ★ Enhancement of forest productivity
- ★ Improvement of planting stock
- ★ Rehabilitation of wastelands
- ★ Efficient utilisation of wood and non-wood forest products

Chemistry Division of Forest Research Institute have following objectives

- ★ Investigations on the forest products to identify their chemical constituents.
- ★ Development of products required by the forest based industries.

To achieve the above objectives we have adopted following strategies:

- ★ Studies on isolation and characterisation of polysaccharides of abundantly available seeds (trees/shrubs), leaves, barks and exudate gums.

- ★ Development of adhesives from renewable sources (cellulose/starch/tannins etc.).
- ★ Isolation and characterisation of chemical constituents of the different parts of the plant for their utilisation.
- ★ Studies on tree bearing oilseeds.

Under strategy one, we have completed the projects on seed gums of *Leucaena leucocephala* (Subabul), *Prosopis cineraria* (Khejri), *Cassia tora* (Panwar) and exudate gums of *Acacia catechu* (Khair), *Acacia nilotica* (gum Arabic) and *Prosopis juliflora* (Mesquite gum). Besides, twelve spp. have been identified which can be tapped for starch. Many patents have been filed on extraction, isolation, derivatisation of gums after thoroughly studying their application aspects. Technologies worth Rs. 50 lakhs have been sold to industries.

Two very interesting achievements of this Institute / laboratory are :

1. Mesquite gum (*Prosopis juliflora*) contains high content of tannin compounds due to which its approval as a commercial food is unlikely. A simple process to purify and remove tannin compounds from mesquite gum was developed. The process involves dissolution of gum in water (50% w/v) with constant stirring, centrifugation, cooling to freezing of centrifugate in acetone (-55°C) and lyophilisation to creamy gum powder (yield - 90%).

Purified gum in tablet formulation by direct compression and wet granulation method was evaluated and compared with commercially used Acacia and Tragacanth gums.

Results of binding and suspending properties of Mesquite gum show that it can be effectively used in pharmaceutical formulations like other gums. (Res. & Industry, 56 (1997) 366-368.)

2. Many natural, synthetic and semi-synthetic polymers, as well as other film forming substances have been employed as wall materials in the process of microencapsulation in various fields. Among the several wall materials, true gum arabic (*Acacia senegal*) is a preferred encapsulating agent for spray dried flavours or dry cloud agents. In India *A. senegal* is still solely imported and therefore, a suitable substitute to it would be welcome for local as well as international use. Efficiency of *Acacia nilotica* gum (spp. widely planted in India), untapped gum source, to microencapsulate vanillin was found to be at par with *A. senegal* gum. This suggests the potential of *A. nilotica* gum as a substitute for a *A. senegal* gum in microencapsulation. (Res. & Industry, 56 (1997) 109-110.)

Our new areas of interest are adhesives from biopolymers and flocculants derived from biopolymers. Biopolymers (Galactomannans) are being suitably modified to impart zeta potential. Successful trials of *C. tora* flocculant have been carried out at Satia Paper Mill, Muktsar (Punjab) and Darula Sugar Mills, Daurala (U.P.). We interact with some industries by organising Industrial Technology Demonstration (ITD) which was last held in Aug., 1998 at the Chemistry Division of this institute. Twentyfive industries participated in this demonstration.