

The symptoms and MLO of the niger phyllody disease resemble other MLO-associated plant diseases⁴⁻⁶.

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NEWS

Third NOST conference

The National Organic Symposium Trust (NOST) conducted its third conference at Hotel Kalinga Ashoka, Bhubaneswar during 6th-9th December 1992. Continuing the tradition set in the second meeting at Aurangabad (cf., *Current Science*, 1991, **60**, 138), the third NOST conference was dedicated to the memory of Professor T. R. Seshadri, an eminent organic chemist of yesteryears (1900-1975) who did a life time research on the oxygen heterocycles of natural origin. A carefully chosen group of 54 enthusiastic scientists, representing the academic institutions, national research laboratories and industrial research institutions, from all over the country belonging to the age group 25-80 participated in the Bhubaneswar meeting and did the 'karseva' to Indian organic chemistry without any destruction or distraction. Unlike the earlier meetings, a welcome change noticed in the Bhubaneswar meeting was the participation of five scientists from abroad, four from USA and one from Israel. The meeting was organized in a pleasant and peaceful atmosphere despite the fact that total unrest was prevailing in most parts of the country during that time.

There were 35 presentations in all, packed in 12 sessions each focusing a different theme, covering almost all the areas of organic chemistry ranging from natural products to bioorganic chemistry, organic synthesis using conventional reagents to fancy organometallics, photochemistry to electrochemistry, theoretical aspects to computer-designed synthesis. As earlier the afternoons were kept free for informal interactions

as all the participants were housed under one roof. After the formal welcome address by K. Nagarajan, Chairman, NOST-Council, the meeting started in the evening of 6th December 1992 with a dedication speech by T. R. Govindachari (SPIC, Madras) covering various facets of the life of Professor T. R. Seshadri (whom Sir Robert Robinson used to rate as the best student he ever had) including his dedication to research at the expense of social life. The scientific session was flagged off with a fine lecture on the development and application of the α -metallation of tertiary amines chelated to Lewis acids, by one of the pioneering synthetic organic chemists of the country, S. V. Kessar (Punjab University, Chandigarh). In the post dinner session, A. Hassner (Bar Ilan University, Israel) highlighted the importance of the intramolecular 3+2 dipolar cycloadditions for the regio- and stereoselective construction of heterocycles, whereas the use of hetero Diels-Alder reaction for the same purpose was presented by R. S. Kuruskar (Poona University, Pune). Synthesis and various transformations of heterocycles was the subject matter of the talk given by Harjit Singh (Gurunankdev University, Amritsar).

The second day started with emphasis on carbohydrates. Modification of carbohydrates to useful carbocyclic chirons and more interestingly to ligands of industrially useful chiral catalysts (for Ni catalysed hydrocyanation) was presented by T. V. Rajanbabu (Dupont, USA). Contemporary developments in the field of carbohydrate chemistry was

reviewed by K. Vijayakumaran (Laboratory Chimique and VHS, Madras). A. V. Rama Rao's (IICT, Hyderabad) presentation dealt with two aspects. First he discussed the pros and cons of development of technology for various drugs in India, and in the second part, he explained the progress in his group's synthetic efforts towards vancomycin. The systematic development of proscar as a 5 α -reductase inhibitor and drug for the treatment of prostate enlargement was explained by Raman Bakshi (Merck, USA). Development of various methodologies as well as total synthesis of various terpenoids was focused in the evening session. First G. S. R. Subba Rao (IISc, Bangalore) explained the use of dihydro-aromatics obtained by Birch reduction, in the synthesis of various sesquiterpenes of diverse molecular frameworks. This was followed by an account of the efforts made towards the construction of the carbon skeleton present in Taxol, a very hot molecule in cancer therapy, which was presented by G. Saha (IACS, Calcutta). Later, development of a radical cyclization reaction-based methodology for spirobutyrolactones and its extension to the sesquiterpenes, bakkenolides was presented by A. Srikrishna (IISc, Bangalore). A practical and simple synthesis of chiral artemisinin, an anti-malarial, using an intramolecular Diels-Alder reaction strategy was explained by T. Ravindranathan (NCL, Pune). This was followed by a presentation from B. Venugopalan (Hoechst, Bombay) on the synthesis of various analogues of artemisinin and evaluation of their anti-malarial activity. R. Jeyaraman (Bharatidasan University, Trichy) explained the generation of dioxiranes and their

applications in organic synthesis. Synthesis of various 1,2,4-trioxanes and trioxepanes as simple analogues of artemisinin was the subject matter of the lecture given by Chandan Singh (CDRI, Lucknow).

On the third day, after exploring the Konark and Puri temples, the evening scientific session started with an overview of the natural product research by A. Banerji (BARC, Bombay). This was followed by the presentations by two young scientists T. Rajamannar (SPIC, Madras) and S. Janardhanam (Madras University) on the synthetic aspects of tricyclic systems using vinyl radical cyclization as the key reaction. The post dinner session was illuminated by the talk on organic materials (new organic π donors) by M. V. Lakshmikantham (University of Alabama). Origin of the various molecular mechanics calculations and how to utilize them was illustrated by E. D. Jemmis (University of Hyderabad) in a simplified manner. Subsequently S. Jena (Utkal University, Bhubaneswar) presented the use of computer programmes in organic synthesis.

Photochemistry was the focal theme of the opening session on the fourth morning. First V. Ramamurthy (Dupont, USA) explained various aspects of zeo-

lites followed by their effect on the photochemistry of various substrates. Later A. Ghosh (RRL, Trivandrum) presented a talk on the photodegradable polymers containing a *o*-nitrobenzyl chromophore. K. Pitchumani continued the topic and discussed the role of cyclodextrins and clays on various photorearrangements. A novel electrochemical mediated 3,3-sigmatropic shifts was unveiled by K. K. Balasubramanian (IIT, Madras) in his lecture. Attempts to construct the molecular houses (calixarenes) was presented by P. Rajkumar (Madras University). In the organometallic front, while A. Sarkar (NCL, Pune) explained the discovery of a new rearrangement reaction in Fischer carbene complexes, S. Sengupta (Jadavpur University, Calcutta) explored the role of palladium catalysts in the coupling of diazonium compounds with olefins. The final evening session was on bioorganic chemistry. In this session V. N. Rajashekar Pillai (Kerala University, Kottayam) highlighted the discovery of a few efficient polymeric supports for the peptide synthesis. N. Jayaraman (IIT, Kanpur) presented the construction of zinc finger modules and their interactions with DNA. S. Bhattacharya (IISc, Bangalore) explained the complexity of the vesicular topography and

their influence on the regulation of the reactivity. The last session of the meeting started with a talk by R. Sankara Subramanian (BPRL, Bangalore) on the enantioselective synthesis of indolizidine alkaloids. Enantiospecific synthesis using enzymes was discussed by N. W. Fadnavis (IICT, Hyderabad) and V. S. Parmar (Delhi University). Finally, S. C. Basa (RRL, Bhubaneswar) presented a talk about the research activities pursued in RRL, Bhubaneswar.

The scientific content presented in the third NOST meeting was very good and the discussions following the lectures were stimulating. Indeed, it is very heartwarming to note, as one of the senior members rightly pointed out, the average age of the participants who made good presentations is quite low, which may portend a bright future for research in organic chemistry in India. Even though this symposium did provide encouragement to local scientists, in future it will be worth exploring the possibility of giving an opportunity to more local scientists at least to attend the lectures (perhaps in an informal manner without registration).

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RESEARCH NEWS

Insights into plasmid biology

Plasmids are autonomously replicating double stranded DNA molecules found in many gram negative and gram positive bacteria. These genetic elements are dispensable for cell viability but they confer advantage in terms of viability under selective conditions such as presence of an antibiotic. The size of naturally occurring plasmids can vary from approximately 4 kb to as large as 250 kb and they can confer such diverse phenotypes on the cell such as drug resistance, degradation of heavy metals, colicin production, virulence factors in case of many pathogenic bacteria and metabolism of various organic compounds. In addition to viruses and

phages, plasmids have played an important role in the evolution of molecular biology. Their small size, greater copy number and dispensability for cell viability are the main reasons that these genetic elements have been used extensively in the study of many biological processes such as replication, transcription and translation. Plasmid vectors are one of the most extensively used systems for the expression of prokaryotic and eukaryotic genes. Better understanding of their replication, stability and ability of some of them to survive in different hosts will help in designing more versatile cloning vehicles as well as in gaining insights into the problem

of spread of drug resistance.

A meeting was held in Madrid (EMBO workshop on promiscuous plasmids of gram positive and gram negative bacteria—Magalia Castle, Las Navas del Marques, Spain, September 18–22, 1992) to discuss the latest developments in replication, maintenance, conjugal gene transfer and promiscuity of plasmids. Some of the recent advances and interesting aspects of plasmid biology discussed in the aforesaid meeting are briefly presented below.

Mechanism of replication

Richard Novick (Public Health Research Institute, New York, USA) and Saleem Khan (University of Pittsburgh, Pittsburgh, USA) described the mechanism