

VISIT OF INDIAN DELEGATION TO SWEDEN & DENAMRK (21-10-06 to 01-11-06)

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Program Highlight

Day	Date	Program
1	21 Oct 06	Left India from Bombay by Swiss Air LX 155 to Zurich and then by LX 1266 to Copenhagen
2	22 Oct 06	<ul style="list-style-type: none"> • Prof. Baboo Nair received us at Copenhagen Airport and reached by train to Malmo, Ibis Hotel at 11.00 • Visit to Dr Nair's home at 15:00 • Visit to Alnarp Campus • Dinner in Lund Hotel (hosted by Dr Abdulla)
3	23 Oct 06	<ul style="list-style-type: none"> • Scientific seminar in Copenhagen (Orestad) organized by SASNET-Fermented Foods and Oresund Food Net. (9:30 -15:30) • Reached Malmo by night.
4	24 Oct 06	<ul style="list-style-type: none"> • Company visits - Biogaia & Indevex (13:00 - 17:30) • Dinner at Hotel New Delhi in Lund.
5	25 Oct 06	<p>IFHIC 2006 International Food & Health Innovation Conference:</p> <ul style="list-style-type: none"> • Lab tour - Food technology Dept of Lund Institute of Technology and The Clinical Research Centre of UMAS, Malmo (8:30-12.15) • Registration at the conference - 12:30 • Plenary Session - 13:30-16:30 • Parallel Nutrition and Innovation Sessions - 16:30-18:00 • Welcome Banquet at the City Hall - 19:45-23:00
6	26 Oct 06	<p>IFHIC 2006 International Food & Health Innovation Conference:</p> <ul style="list-style-type: none"> • Parallel Nutrition and Innovation Sessions - 09:00-18:00 • Open House with buffet dinner - 18:00- 20:00
7	27 Oct 06	<p>IFHIC 2006 International Food & Health Innovation Conference:</p> <ul style="list-style-type: none"> • Parallel Nutrition and Innovation Sessions - 09:00-14:45 • Closing Plenary Session - 15:00- 15:40 • Post-conference mingling - 15:40

8	28 Oct 06	<ul style="list-style-type: none"> • To Copenhagen City by train in the morning. Luggage kept at Malmo Station • Sight seeing by bus 11:00-13:30 • Reached Malmo by train at 16:00 • Proceed for Stockholm by 17:26 train. Reached Stockholm by 23:00 at Hotel Vanadis.
9	29 Oct 06	<ul style="list-style-type: none"> • Sunday - Sight seeing in Stockholm first by bus and then by boat (11:00-12:30 and 12:30-13:30) • Late Lunch in Indisk hotel and back to hotel at 17:00
10	30 Oct 06	<ul style="list-style-type: none"> • Visit to Royal technology Institute (KTH) 9:30-12:15 • Meeting with Ambassador and Lunch hosted by the Embassy at Hotel Asha - 13:00-14:15 • Visit to Arla Foods - 14:30 -17:00 • Shopping in Stockholm
11	31 Oct 06	<ul style="list-style-type: none"> • Leaving early morning at 4:00 from Hotel Vanadis by taxi to Arlanda Airport • Return journey to Zurich by LX 4667 and to Bombay by Swiss Air LX154 • Arrival in Bombay at 22:30
12	01 Nov 06	<ul style="list-style-type: none"> • Journey from Bombay to Vadodara by 9W 343 Jet Airways • Vadodara to Anand by Car; reached Anand at 13:00

The Report.....

SASNET-FF and Oresund Food Net Seminar (October 23, 2006) ...

It was a new initiative where the networks functioning in Europe and South Asia join hands to bridge a gap of scientific and industrial exchanges in food innovations. The meeting was like a concentrated capsule, where small numbers



*Members of the delegation from left: Dr JB Prajapati, Dr PA Shanakr, Dr G Vijayalaxmi, Dr Rekha Singhal, Dr Baboo Nair and Dr CD Khedkar
(Photo courtesv-Lars Eklund. SASNET)*

of people with high concern were present. There were five presentations on Indian research and four presentations of European research and innovation shared by both scientists and industrialists. I started the presentation by giving a glimpse of work done since last 25 years on Microbiological, Technological and Clinical aspects of probiotic Lactobacilli at SMC College of Dairy Science, AAU, Anand.

Presence of top level officials of multinational giants like Chr. Hansen, Danisco, Biogaia, Arla, etc indicated the seriousness of Danish and Swedish Industries to have collaborations with Indian partners and promote research in fermented foods and their health aspects. I appreciate the coordinating capacity of Mr Jorgan Holm, Director of Development of Oresund Food Net www.oresundfood.org. This network is a part of Food Innovation Network of Europe (FINE) wherein Universities, Agro-food companies, policy makers, Government organizations and research organizations join hands for betterment. Oresund Food Net has a strong base of about 1000 members from different sectors. Our special thanks go to Maria Olofsdotter, Project Leader of Unlimited Health of Oresund Food Network for making excellent arrangements for presentations and discussions.

The concluding session provided room for questions and answers as well as discussion in a workshop form to evolve proposals for continuation of the cooperation including opportunities for collaboration with India and other south Asian countries..

The general view of the participants of the seminar was that there are many interesting aspects of traditional fermented foods of south Asia with respect to health promoting properties which are well known though not properly

documented through scientific and clinical experiments. More basic as well as applied research on traditional South Asian fermented food products especially/particularly those of India may contribute in the NPD on functional foods as well as food to combat malnutrition. The common understanding of the meeting was that a further collaboration between Indian and Swedish/Danish partners should include research as well as business aspects.

The following opportunities were identified by the participants:

1 Bring fermented Indian concepts and new products to a wider market

In Europe especially in Nordic countries, there is a lot of knowledge in production of pure cultures for dairy industry. In the Indian subcontinent there are a number of cereal and legume based fermented foods commonly manufactured and consumed at household level in large quantities. One good collaborative project could be based on screening of specific Indian strains/cultures & traditional fermented non-dairy products by institutions/industries of the Öresund region in collaboration with Indian institutions/industries for improved documentation of the strains with respect to health promoting effects as well as functional and sensory properties. This could be evolved as an integrated part of a project of development cooperation to assist India to take advantage of its food culture in entering the global economy while for Öresund institutions it may offer a chance to apply the competency available in developing and marketing pure cultures for production of these products in an industrial scale for global marketing. It is important for India to produce more and more value added food products for export if it should succeed in raising the productivity of the agro-food sector and thereby increase the income and purchasing power of the poor people who get their income from this sector.

In an ongoing project carried out by SASNET-Fermented Foods, which is financially supported by EU, a pilot study on traditional Indian products is being undertaken and an extensive data collection project is being developed. A collaboration between Öresund and India could be a continuation of this effort. Work to be done is collection of samples of traditional fermented foods, identification of the strains and its characterisation with a view to using them for production of starter cultures.

It can be said without much exaggeration that Indian foods are well known all over the world. A proof of this is the presence of Indian restaurants in practically every metropolis of this world. However, it is not easy for any one to buy Indian foods in any of the stores of world market. This is, it is believed, due to the lack of research and knowledge in the keeping quality of prepared Indian food items. In the domestic market Indian food items have a quick turn over and are consumed in a few days. If India has to take part in the global market, there is need for study of shelf life and keeping quality of prepared foods and new knowledge on how to extend the life of such products. There is need for study of the role of carbohydrates, proteins, lipids and other components in the physical properties of the foods and their fate during packaging, transport, and storage at different conditions of temperature, pressure, moisture content etc.

There is a great need of new knowledge in food science and nutrition for successful up scaling of traditional Indian small scale production to render Indian fermented products more commercially available and accessible in India and other markets. At present

numerous very small players are predominant and the level of value addition in the Indian agro-food sector is only around 7% and the total value of Indian export to the global market is less than 1%. It is inevitable for India that it should increase its export of products and mainly agricultural products, if it intends to promote poverty alleviation as it is stated in the policy document of the present government of India

2. Communication and documentation

SASNET-Fermented Foods is primarily a network of scientists while Öresund food net organises food industries. SASNET-Fermented Foods in cooperation with ÖFN could play a role in promoting functional food on the Indian market based on the thorough experience in Scandinavia. A close cooperation could facilitate flow of information not only between two countries but also between two continents as Öresund is opening doors to EU and SASNET represents all the countries of south Asia. If we cooperate in collecting information and build a data base, then we will have access to information and knowledge useful not only for research and higher education but also for commercial purposes leading to profitable enterprise of mutual benefit.

3. Strategic alliances

SASNET and ÖFN are also interested in contributing to the establishment of strategic alliances between institutes in India and Sweden/Denmark. The focus could/would be on alliances between SMEs of the Agro-food and biotech sector to stimulate innovation - developing new products and new markets within the food-health sector. A "matchmaking" seminar could be organised in India during 2007.

The Company Visits

Thanks to the organizers of Malmo conference who organized visits to Biogaia and Indevex on 24th October 2006. Biogaia, www.biogaia.com is now coming-up with its own brand with launch of probiotic chewing gum, lozenges and chewable tablets for gut health. The beautiful presentation by Mr. Christoffer Lundqvist, Product Manager gave the glimpse of research and clinical trials (26 trials involving 2613 subjects) on *Lactobacilli reuteri* strain which has been found very useful in oral and gut health of human beings. The strain was first isolated by Prof. Gerhard Reuter of Germany in late 70's . The gift samples given by the company have been tasted by our group at the Department. I talked about SASNET-FF to Mr. Christoffer and offered to give support in clinical trials for *Lb. reuterii*, if required in India.

The visit to "Indevex", www.indevex.com was a new fascinating experience. In a beautiful country side near Lund, the Igelosa Life Science Community building makes people healthy and happy. The company has come out as an off-spring of Lund University Hospital, where **Professor Stig Steen** is working as specialist lungs transplant surgeon. His different and innovative way of thinking to keep people alive has given birth to this company. An important part of his research has focused in developing an easily ingested food product that contains exactly the right combinations of ingredients to make critically ill patients strong enough to withstand transplant operations and to quickly regain their health afterwards. He emphasized that the food must contain a complete mix of nutrition to keep body in anabolic (muscle-building) condition and these

food must be based on pure natural genuine food ingredients, since most persons respond negatively on synthetically processed additives. His company has come out with several low Glycemic Index foods branded as "Inzone" in the form of All Food Drink, Muffin, Bars, Chocolates and Balance drink. We were given all these samples for taste and we really enjoyed them! The company has a well equipped hospital with the state of the art operation theater. Their Chinese Collaborator Doctor showed us the operation theater and a life saving instrument "LUCAS" which is used to give artificial breathing while the patient is being transferred to hospital. Presentation by Dr Christer Franszen, Managing Director and Video show of actual lung transplant operation was really thrilling!

The Lab Tour

The forenoon of Wednesday, 25th October was busy in visiting Food Technology Dept of Lund Institute of Technology and The Clinical Research Centre of UMAS, Malmo. The presentation by young scholars of LTH on glycemic index, gelling properties of various starches, GI reducing food ingredients, etc was fascinating. The laboratories are well equipped with state of the art instruments and other consumables to conduct advanced research.

This was one of the Departments of the historical Lund University, which has founded in 1666. With eight faculties and a multitude of research centres and specialized institutes, it is today the largest unit for research and higher education in Sweden which has 42,500 students and 6000 employees at present. Lund University receives 1600 exchange students and sends 800 abroad annually. The University has exchange agreements with more than 600 universities in more than 50 countries world-wide and has more than 400 contracts in the EU-program. More than 3000 post-graduates work at Lund University, 45% of them women



The visit to UMAS, Clinical Research Centre of Faculty of Medicine of Lund University at Malmo was a unique experience. We were lucky that **Dr. Hugh Connell**, Administrative Director of the institute, who had been the master mind behind entire architecture of the building and interior design suited to working by the scientists and students was with us to explain the minute details of the building and working inside. The building has been made with plenty of glass inviting day light. The research cabinets for tissue culture and microbiological work have also been provided with glass walls so that person working inside can see what is going on out side and vice versa. All the chairs are ergonomically designed so as to keep the persons active and stress free. The entire education at UMS is through Problem Based Learning (PBL) technique. There are small rooms

with plenty of place to write on white boards, where 8-10 students can sit together and discuss various topics of their learning. The students are given practical experiences of working in medicine and surgery by facing them with dummy patients and a robot called Mr. Simon.

The Malmo Conference.....



The Food and Health Innovation conference was really innovative especially for the Indian delegation as there are striking differences in organization for example;

- There was no formal inaugural session, no dais with important persons on stage, no formalities.....
- The Moderator, Prof. Peter Sylwan, a science writer invited Mr. Bengt Holgersson, Chairman of Skane Food Innovation Network and Former Country Governor of Skane Region at the podium for welcome address. In seven minutes he welcomed the guests, introduced to the theme of conference and declared conference open!
- The registration was simple and delegate friendly. One perforated sheet contained delegate badge, label for bag, label for type of food, conference dinner pass and most importantly a bus pass- municipality of Malmo had given a free bus pass for the delegates to travel from their hotel to conference venue.
- There was overwhelming participation of food companies at the exhibition with plenty of live samples of food and lot of relevant literature. I appreciate a counter by renowned scientific publisher with free sample copies of the journals.
- The poster session with display of 80 posters at a time was well organized.
- Frequent serving of food and beverages and fruits *ad libidum*. You can sit with a cup of tea/coffee or a fruit in the session, relax, listen and learn!!
- I appreciate the arrangement of vegetarian food made by the organizers for a very few people like me!

- Another most appreciating thing was the punctuality of the entire program. Everybody was sincere in keeping their time that avoided unnecessary hassles and boredom.
- The concluding session was again exciting. The moderator, Prof. Peter Sylwan called expert panel of three eminent personalities, Dr Kelley Fitzpatrick, Coordinator of FlaxCanada 1015; Dr Mahmood Khan, Global Innovation Leader, Unilever, USA and Prof. Inger Bjorck, Director of Functional Food Science Centre, Sweden at the podium and asked questions like a journalists to get information about what this conference is, what we have learned, what is required to be done in future, what have we achieved, etc, etc???
- The closing address with vote of thanks was given by Mr Goran Tunhammar, Country Governor of Skane.
- As soon as the conference ended, all the participants got an email with feed back form!

In the inaugural plenary session there were three presentations enough to agitate you! I liked the most aggressive presentation by **Dr Bruce Holm of Canada** explaining the fact with full data that how functional food ingredients can reduce the health care costs significantly. He advised to switch over from current “medical model” to aggressive “preventive model” based on introduction of risk factor modifying functional foods plus nutraceuticals from early age. As per his estimates, minimum Canadian savings in direct health care expenditure could be 10 billion dollars per year. The next presentation by **Dr Fred Brouns from USA** was all about decreasing ‘negatives’ and increasing ‘positives’ in functional foods for improved public health. He stated that we have a challenge of integrating nutrition and consumer sciences, public health and government need more intensively.

After this session, there were 14 parallel sessions on ‘Nutrition’ and ‘Innovation’ and one company seminar on Superfruits – new research for functional fruit based foods and beverages by Hort Research. New Zealand. I could attend some lectures in both nutrition and innovation sessions. I was happy to know that several food clusters, food innovation networks and groups are actively functioning in Europe and are being actively supported by industry, university and government. In the nutrition sessions there were many presentations on hard core medical aspects of food.



The concluding session

It was delighting to know that European doctors, real medical practitioners take interest in R & D in food and health. This is going to reduce their work and cut down medical costs. This is good for the society and the government because medical facilities are provided to the citizens by the government. In India, I feel that real medical practitioners are skeptic and dis-interested about food research and innovations. Is it because this type of research will make people healthy and reduce the income of doctors??!!

Well, I had a glimpse of posters during coffee and lunch breaks couple of times. I learnt the way of presentation from some of the posters while some poster gave an idea of new concept, for e.g. consumer reasoning concerning healthy food, Effective communication strategies for functional foods, Food + Parma = unlimited health, Antidiabetic food centre and FUNCFOOD –an interdisciplinary Ph.D. programme started at Lund university. Our Indian delegation presented total seven posters at the conference.

The grand welcome banquet hosted by the Dy. Mayor of Malmo at city hall on 25th October was a memorable one.

Leisure time at Copenhagen.....

On 28th October, we enjoyed walking on the streets of historical city and capital of Denmark, Copenhagen. We had a Copenhagen sight seeing by bus driven by a Pakistani friendly pilot, who enjoyed speaking in Hindi with us, was a memorable experience of seeing historical architecture of Denmark, change of guards at royal palace, churches, and beautiful harbour.

Visits in Stockholm.....



"Konserthuset" where the Nobel prize honour ceremony is held

Sunday, 29th October was used for beautiful sight seeing by bus and boat as well as shopping in Stockholm. Both the sight seeing were *in situ* but got full view and information by head phone commentary about various places of Stockholm, the city of islands.

30th October was very busy visiting KTH, Arla Foods and Indian Embassy.

At KTH

In the morning, we were received by Professor Ramon Wyss, Vice President of Royal Institute of Technology (KTH) at the old administrative building. He gave a bird's eye view of the KTH which is the largest technical University in Sweden and among top ten in Europe. The University was founded in 1827 and has 17,000 under graduate and 1500 PhD students, awarding approximately 225 PhD degrees per year. One exciting feature is that KTH offers about 36 masters programs of 1-2 year duration based on a BSc or equivalent. The institute is focusing the areas of IT, BT, pharmaceuticals, materials and nano sciences.



*The delegation with Prof. Ramon Wyss,
Vice President of KTH*

Mrs Alphonsa, International project coordinator then took us for visit to their Biotechnology centre. Dr Gen Larsson, Director of School of Biotechnology briefed us about industry oriented work going on at the centre on protein molecules, metabolites and fermentation technology. She showed us their pilot fermentor plant which also contained a small battery of six 1L fermentors, which is a unique tool for fermentation research. Then we had a quick round of various laboratories related to microbiology, immunology, chemistry, molecular biology and so on.

At Indian Embassy

Mr Rajesh Vaishnav, First Secretary at the Indian Embassy in Sweden received us and then we had a meeting with Her Excellency Ambassador of India, Mrs. Deepa Gopalan Wadhwa.



*The delegation meeting Her Excellency the Ambassador,
Mrs Deepa Gopalan Wadhwa*

I briefed her about the functioning of SASNET-FF and our purpose of visiting Sweden. Her Excellency was kind enough to offer any help that we need to strengthen our network. Especially she agreed to support our proposal to establish centre of excellence on functional fermented foods in India with the help of ministry of food processing industries, Govt. of India. She also hosted lunch for our delegation.

At Arla Foods

Brief Introduction about the Arla Foods and Consumer Nordic R & D was given by Dr Annika Larson, Head of Department of Food Science. Arla Foods is a Cooperative owned by 12,700 milk producers in Sweden and Denmark. This is Europe's largest dairy company, which received 8.6 million kg milk and have a turn over of Approx. DKK 48 billions. In their mission, the company states that we aim to contribute to consumer health and enjoyment by developing products that provide inspiration, confidence and well-being for modern consumers around the world and that is why Arla invests more than DKK 250 millions per year in innovation. I wish that our Indian Dairy Cooperatives learn something from this!! We had a small visit of Arla's aroma laboratory, microbiological lab and pilot production plant.

Dr Astrid Walles-Genberg and Dr Janet Hakansson gave presentation on the research being conducted at Arla on bioscience and probiotics. Dr Christian Eriksson gave interesting presentation on aroma chemistry, instrument called SNIFF and sensory evaluation of their products. The interesting part is that Arla appoints sensory evaluators from the public after thorough selection, who gives their input in maintaining the sensory profile of Arla foods constant thorough out the year.

Acknowledgements.....

- ✓ Prof. Baboo Nair for planning and executing the entire visit and giving constant motivation, critical criticisms and personal care to entire delegation.
- ✓ EU-SPF project and SASNET-FF for funding the entire visit.
- ✓ Prof. MC Varshneya, Vice Chancellor, AAU and Government of Gujarat for their kind permission for this visit.
- ✓ All the concerned persons as indicated in the report, who took us for visit and appraised about the activities.
- ✓ Her Excellency the Ambassador of India for support and hospitality.
- ✓ All the members of the Indian delegation for their cooperation and fruitful participation.

Professor J.B. Prajapati
Anand, 19th November 2006.

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