

Prebiotics

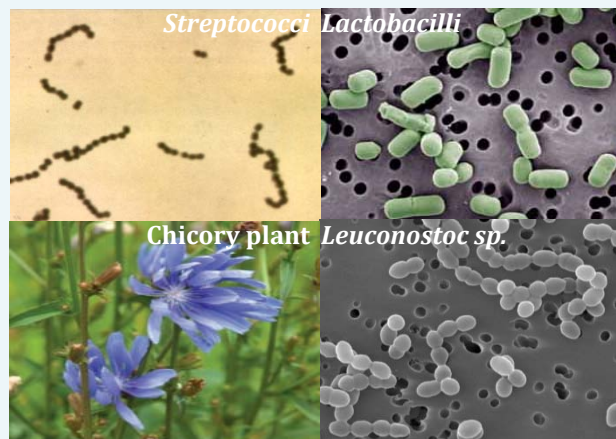
Prebiotics are generally defined as non-digestible polysaccharides and oligosaccharides (NDO), which confer health benefits to the host. Prebiotics can be used as a strategy to improve the balance of intestinal bacteria differing from the probiotic approach in which exogenous strains are included in food. These compounds selectively stimulate the proliferation of beneficial groups of bacteria that exist in the intestinal microbiota. As a consequence, they can constitute a more practical and efficient way to manipulate the gut microbiota compared to probiotics. Strategies for developing prebiotic products aim to provide specific fermentable substrates for beneficial bacteria (bifidobacteria and lactobacilli).

To date, only inulin, fructooligosaccharides (FOS), lactulose, and galactooligosaccharides (GOS) are considered as established prebiotics. In the last few years, increasing interest in the consumption of prebiotic carbohydrates has been observed, so the production of new bioactive oligosaccharides is currently gaining much attention for their potential use as functional ingredients. A new market report titled "Prebiotic Ingredients (FOS, GOS, MOS, Inulin) Market for Food & Beverage, Dietary Supplements & Animal Feed – Global Industry Analysis, Size, Share, Trends, and Forecast, 2012 – 2018," observes that the prebiotics demand was worth USD 2.3 billion in 2012 and is estimated to reach USD 4.5 billion in 2018, growing at a CAGR of 11.4% between 2012 and 2018.

At NIBGE, our group has been carrying out research pertaining to various aspects of biologically active compounds (prebiotics & antimicrobials). We have isolated different prebiotic synthesizing strains from local environment and explored their potential to synthesize compounds with prebiotics (fructans, glucans) and antimicrobial properties. We have also studied the feasibility of using relatively cheaper substrates such as sugarcane juice and molasses for developing an economical process for fructan production. Analysis of genes encoding fructuryletransferase (FTF) and glucosyltransferase (GTF) enzymes in these strains as well as in some strain of archaea is also being explored. The current workshop is going to be organized to demonstrate different biotechnological techniques involved in system biology of prebiotics synthesis from plants and bacteria as well as their evaluation for different industrial applications.

Objectives:

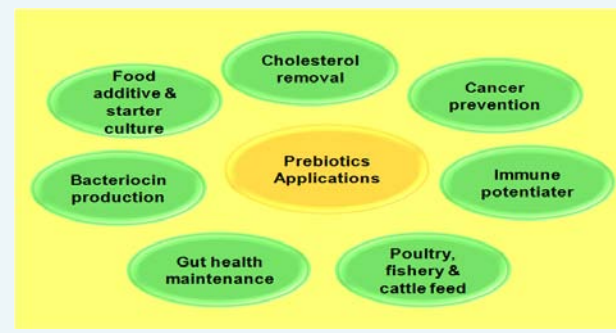
- ✓ Introduction to prebiotic & antimicrobials synthesizing biological systems
- ✓ Process development for prebiotic/antimicrobial synthesis
- ✓ Structure-function relationships of genes & enzymes involved in prebiotic biosynthesis
- ✓ Practical demonstration of Hi-tech instruments involved



Prebiotics sources

National Institute for Biotechnology and Genetic Engineering (NIBGE) was established in 1992 for state-of-the-art research in the area of life sciences. It is an affiliated center of the International Center of Genetic Engineering and Biotechnology (ICGEB), Italy. In addition, it is serving as Center of Excellence in Biotechnology in the country for advancement of basic and applied research in four major research areas i.e., agriculture, health, environment and industry. During the span of time, highly sophisticated research facilities have been developed in order to accelerate R & D activities. Some of those hi-tech equipments include Biolistic Gene Gun, DNA Sequencers, Transmission Electron Microscope, Field Emission Scanning Electron Microscope, Atomic Force Microscope, GCMS, and LCMS.

One of the salient features of NIBGE is M.Phil and PhD programme through which scientific excellence is being integrated with education and training of the young researchers and this has led to the raised scientific stature of NIBGE. Besides, research facilities and expertise are available to private and public sector in terms of specialized training courses for researchers, university students and teachers.



Two Days Workshop on Systems Biology of Prebiotic Synthesis

January 28—29, 2015

Dairy products
Beverages and health drinks
Spreads
Cereals
Bakery products
Sauces and dressings
Meat products
Dried instant foods
Canned foods
Food supplements
Animal feeds
Pet foods



National Institute for Biotechnology & Genetic Engineering (NIBGE),
P.O. Box No. 577, Jhang Road, Faisalabad,
Pakistan
(+92 41 2651475-9)
URL: www.nibge.org

Chair of the Organizing Committees

Dr. Shahid Mansoor, S.I. Director, NIBGE

Advisory Committee

Dr. Shahid Mansoor, S.I. Director, NIBGE
Dr. M. Afzal Ghauri DCS, NIBGE
Dr. Nayyer Iqbal Director A & B, PAEC

Organizers

Dr. Munir Ahmad Anwar PS, NIBGE
Dr. M. Afzal Ghauri DCS, NIBGE
Dr. Shazia Khaliq SS, NIBGE

Who should participate:

We welcome liaison between academia and industry through young faculty members, researchers, entrepreneurs, postgraduate students and relevant technicians working in academia, research institutions, industries and related commercial analytical facilities for active participation in this workshop.

Participants 25
Funding
Registration Fee: Rs. 1,000/- (For Students)
Rs. 2,000/- (For Employees)
Accommodation and Meals (Dinner/Breakfast):
Rs. 1,000/- (Per Day, Optional)

Note:

All dues should be paid after selection, before or at the time of registration by the participant in the form of cash/Bank Draft in favour of "Accounts Officer, NIBGE, Faisalabad".

Registration Closing Date
January 25, 2015

Please send complete application form and CV to:

Dr. Munir A. Anwar or Dr. M. Afzal Ghauri
Industrial Biotechnology Division
National Institute for Biotechnology & Genetic Engineering (NIBGE),
P. O. Box. No. 577, Jhang Road, Faisalabad
(+92-41-2550814)

Email: munir_bioprocess@yahoo.com

Cell No. 03004847690

Email: ghauri1961@gmail.com

Cell No. 03007231572

Application forms can be downloaded from:
www.nibge.org

Application Form

Name _____

Date of Birth _____ Gender _____

CNIC No. _____

Affiliation: _____

Institute: _____

Designation: _____

Address: _____

Cross Cheque No. _____

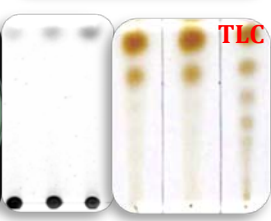
Phone: _____ Fax: _____ Email: _____

Research/Training Experience: _____

Accommodation Required: YES/NO

Applicant's Signature: _____

Head of Department: _____
(Signature with Official Stamp)



Instruments and techniques