

CODE

BAN:03 2008

INSTITUTE:

BIRDEM - Bangladesh Inst for Research and
Rehabilitation on Diabetes, Endocrine, and Metabolic Disorders,
122 Kazi Nazrul Islam Avenue, Dhaka 1000, DHAKA, Bangladesh
Fax: +880-2 8613004

RESEARCH GROUP:

Diabetes research

LEADER:

Dr Liaquat Ali

Phone (office): +880-2-8613700, 8617130 (direct),

+880-2-8611138; ext- 2233

E-mail: lali@dab-bd.org

Staff			Students			
Academic PhD	Academic Other	Tech-nicians	Sandwich PhD	Local PhD	Sandwich MSc/MPhil	Local MSc/MPhil
8	31	10		10		69

Awarded degrees	95/02		2003		2004		2005		2006		2007		2008	
S=Sandwich; L=Local	S	L	S	L	S	L	S	L	S	L	S	L	S	L
PhD	2	18		5	1	8	1	4		3	1			1
MSc/MPhil/Licentiate	3	43		15		3		21		55		35		36

Publications	95/02	2003	2004	2005	2006	2007	2008
International journals	34	5	8	3	3	8	3
National journals	15	3		3	6	8	1
Conference reports	164	50	24	29	52	41	53

Arrangement of work-shops/symposia/conf.	17	3	3		5	5	6
--	----	---	---	--	---	---	---

Visits by IPICS staff/ Swedish scientists	12/8			2/4	1/		
--	------	--	--	-----	----	--	--

No. of participants trained in IPICS prog.	Sweden or other country in Europe	Regional laboratory
Until December 2008	9	6

IPICS funding (total for the specified period)	Period of funding	Fellowship months (total no.)	Training costs (k-SEK)	Other costs (k-SEK)	Total (k-SEK)
	1995-2008	149	1210	3984	5194

Cooperation initiated	1995 (1988 as part of BAN:01)
-----------------------	-------------------------------

SUMMARY OF THE RESEARCH GROUP BAN:03

Diabetes mellitus is one of the major chronic diseases affecting mankind all over the world. Since the disease is heterogeneous in character there is considerable variation in its etiology and pathogenesis among different races and environmental situations. As a result, both prevention and management policies for diabetes mellitus necessitates basic, clinical and epidemiological research keeping the local perspectives in mind. The following areas of research on diabetes in Bangladesh have been given priority by the BAN03 project:

a) Epidemiology: To study the extent of the problem of diabetes along with its associated genetic and environmental factors in Bangladeshi community a series of studies in this area have been undertaken by our group. **b) Classification:** There are still major controversies regarding the classification of diabetes. The main projects of BAN03 in this area includes the investigation on the relative prevalence of different types (Type I & Type II) of diabetes with particular emphasis on clinical, biochemical and genetic characteristics of the so called malnutrition related diabetes mellitus (MRDM) class. **c) Etiopathogenesis of diabetes mellitus and its complications:** BAN03 researchers have been investigating the genetic and environmental factors in Bangladeshi diabetic patients. In addition to the disease itself acute and chronic microvascular complications of diabetes, particularly in the young onset diabetic patients, are being studied by BAN03. A series of studies on the pathophysiological and biochemical aspects of these complications, particularly in relation to nephropathy and neuropathy, have been undertaken. **d) Management of diabetes:** The projects undertaken by BAN03 on nutrition research include the measurement of glycemic and insulinemic indices in response to common food items of Bangladesh and also chemical analysis of different dietary components in the country. Another major focus of BAN03 is drug research which aims to explore plant materials as a source of agents for the treatment of diabetes and its complications. Natural compounds are now considered as a major potential source or lead for antidiabetic agents. Since Bangladesh and neighboring countries have a rich tradition in indigenous herbal medicine BAN03 has taken antidiabetic plant materials as a major research area. BAN03 researchers are now engaged in screening various plant materials (supplied by chemist colleagues in the University of Dhaka as well as from Nepal, India, Pakistan and other neighboring countries) for their antidiabetic and anti-platelet activities. The fractions and compounds of the antidiabetic materials are further tested for their mechanism on action both *in vivo* and *in vitro* using isolated rat pancreatic islets and B cells (for exploring insulin secretion and Ca_i^{2+} manipulation) and also gut epithelium (for investigating delayed glucose absorption). Realizing this importance of economic aspects of diabetes care in developing countries like ourselves the BAN03 Group has undertaken a few projects in this area.

To achieve its objectives BAN03 has been able to establish active scientific collaborations both in home and abroad. Apart from the original collaborations in Dhaka and Uppsala links have been established with scientific departments/institutes in Bangkok, Calcutta, Karachi, London, Ulster, Basel, Copenhagen and Paris. The Group has played a crucial role in the creation of the Asian Network of Research on Antidiabetic Plants (ANRAP) which, in turn, has stimulated new regional collaborations through scientific meetings, fellowships and exchange visits. With its

direct contribution in the planning and development of various services and projects of the Association the Group is continuously creating a bridge between basic science research and its application in health care delivery and manpower development.

Keywords: Diabetes mellitus, Type I diabetes mellitus, Type II diabetes mellitus, MRDM, FCPD, Diabetic complications, Medicinal plants, Antidiabetic plant materials, Glycemic index, Pancreatic islet, Pancreatic B cells, platelets, Antiplatelet agents.

Training, research visits:

Year	Participant (months)	Research host	Research field
95/96	Fahmida Karim (6)	B Hellman BMC, UU	Diabetes studies
96	Zahid Hassan (6)	H P T Ammon, Univ of Tübingen, Germany	Toxicology
96	Md Nur-e-Alam (8)	Atta-Ur-Rhaman, HEJ Research Inst, Karachi	Natural products/ bioactive substances
96/97	Md Z Chowdhury (10)	G Hitman, Univ of London, England	Diabetes studies/mol biol
97	K Meftun Ahmed (9)	E Gylfe, BMC, UU	Diabetes studies/mol biol
97/98	Nasima Chowdhury (11)	P Flatt, Univ. of Ulster Northen Ireland	Diabetes studies/ Molecular biology
98	Nur-e-Alam (11)	HEJ Res Inst, Karachi	Organic chemistry
98	Zahid Hassan (8)	G Hitman, Royal London Medical College, England	Diabetes studies/mol biol
98	K Meftun Ahmed (7)	E Gylfe, BMC, UU	Diabetes studies/mol biol
99	Zahid Hassan (6)	G Hitman, R London Med Coll	Diabetes studies/mol biol
99	JM Abdul Hannan (7)	B Portha, CNRS, Univ of Paris France	Diabetes studies/mol biol
99	K Meftun Ahmed (8)	E Gylfe, BMC, UU	Diabetes studies/mol biol
99/00	Nur-e-Alam (6)	HEJ Res Inst, Karachi	Organic chemistry
00	Nasima Chowdhury (5)	P Flatt, Univ. of Ulster	Diabetes studies/mol biol
00	Zahid Hassan (5)	G Hitman, R London Med Coll	Diabetes studies/mol biol
00	K Meftun Ahmed (11)	E Gylfe, BMC, UU	Diabetes studies/mol biol
00/01	Shahnaz Parvin (6)	E Gylfe, BMC, UU	Diabetes studies/mol biol
01	Zahid Hassan (6)	G Hitman, R London Med Coll	Diabetes studies/mol biol
01	K Meftun Ahmed (10)	E Gylfe, BMC, UU	Diabetes studies/mol biol
01	Soheli Sattar (3)	K Gyr, Univ of Basel, Switzerland	Diabetes studies/mol biol
02	Zahid Hassan (2)	G Hitman, R London Med Coll	Diabetes studies/mol biol
03	Soheli Sattar (3)	K Gyr, Univ of Basel,	Diabetes studies/mol biol

		Switzerland	
03/04	Abdul Hannan ()	P Flatt, Univ. of Ulster N Ireland	Diabetes studies/mol biol
04	Soheli Sattar (2)	K Gyr, Univ of Basel, Switzerland	Diabetes studies/mol biol
06	Farzana Saleh (6)	I Choudhury, HEJ Inst. Karachi Pakistan,	Diabetes Biochemistry
06	Soheli Sattar (3)	Witcomb, Univ of Pittsburg, USA	Diabetes Biochemistry
07	K Boron Biswas (6)	U Gembruch, Univ of Bonn, Germany	Diabetes Research
07	Farzana Saleh (6)	I Choudhury, HEJ Inst. Karachi Pakistan	Diabetes Research
07	Suad Nahid (1) From HEJ Inst. Karachi Pakistan	Hosted by BIRDEM, Dhaka Bangladesh	Diabetes Research
07	Huneza Khanam (1) From HEJ Inst. Karachi Pakistan	Hosted by BIRDEM, Dhaka Bangladesh	Diabetes Research
07	Tushari Bandara (6) From SRI:07 Sri Lanka	Hosted by BIRDEM, Dhaka Bangladesh	Diabetes Research
07	Awarnali Sharma (6) From Guawahati India	Hosted by BIRDEM, Dhaka Bangladesh	Diabetes Research

Other visits to Sweden:

A K Azad Khan	1990, 1992, 1994, 1995
L Ali	1994, 1995, 1996, 1997, 1998, 1999

Visits by IPICS staff/reference group:

R Liminga	1985, 1986, 1989, 1990, 1992, 1993, 1994, 1995, 1996, 1997
L Sjöblom	1995, 2005
M Åkerblom	1997, 1999, 2000, 2005
P Wilairat	2002, 2005
L I Elding	2005
A Kamal-Eldin	2005
B Cassels	2005
P Sundin	2006

Visits by Swedish scientists engaged in the cooperation:

B Hellman	1989, 1992, 1994, 2000
E Gylfe	1994

Long-term visits by European students/researchers:

Livio Rossi, Basel (2ys)

1998-99

Funding: (k-SEK)

Years	Training/ Exchange	Other project costs (equipment etc.)	Total
1995/96 (18 months)	336	107	443
1997	104	262	366
1998	67	271	338
1999	251	134	385
2000	164	200	364
2001	110	269	379
2002	-	486	486
2003	-	472	472
2004	-	410	410
2005	2	467	469
2006	4	368	372
2007	63	316	379
2008	109	222	331
Total	1210	3984	5194

The following staff/students from BIRDEM have been trained through IPICS support previously as members of the BAN:01 project, divided into two projects, BAN:01 and BAN:03, respectively from July 1995.

Year	Participant	Research host	Research field
88/89	Liaquat Ali (4)	B Hellman, BMC, UU	Diabetes studies
89/90	Liaquat Ali (10)	B Hellman, BMC, UU	Diabetes studies
90/91	Liaquat Ali (4)	B Hellman, BMC, UU	Diabetes studies
90/91	Nani G Banik (3)	P Keay, ICAT, Luton, UK	Instrument maintenance
91/92	Samir Saha (10)	B Hellman, BMC, UU	Diabetes studies
92/93	Liaquat Ali (2)	E Gylfe, BMC, UU	Diabetes studies
92/93	Rokeya Begum (3)	B Hellman, BMC, UU	Diabetes studies
92/93	Samir Saha (10)	B Hellman, BMC, UU	Diabetes studies
93/94	Zahid Hassan (4)	D Kanjanapothi Chiang Mai U, Thailand	Toxicology
93/94	Samir Saha (8)	B Hellman, BMC, UU	Diabetes studies
94/95	Samir Saha (6)	B Hellman, BMC, UU	Diabetes studies

Financial support from other sources:

1) International Foundation for Science:

* L Ali; 1992, 1994 grant F/2061-2

2) Swedish Institute fellowship to:

* Samir Saha B Hellman, BMC, UU Diabetes studies

3) Diabetic Association of Bangladesh;

4) International Diabetes Federation; Eli Lilly Price;

* L Ali; 1994

5) Bangladesh Medical Research Council (BMRC);

6) Ministry of Science and Technology, Peoples Republic of Bangladesh;

7) Palm Oil Research Institute of Malayasia (PORIM);

8) DANIDA

9) Univ of Basel, Switzerland