Bharath
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared as Deemed-to-be University under section 3 of UGC Act, 1956)
(Vide Notification No. F.9-5/2000 - U.3, Ministry of Human Resource Development, Govt. of India, dated 4th July 2002)
Accredited by NAAC NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL
Phone : 044-22290742 / 22290125 . Telefax : 044-22293886
Website : www.bharathuniv.ac.in
173, Agaram Road, Selaiyur, Tambaram,
Chennai - 600 073. Tamil Nadu.

Ref. No.SMS-2015-O-02 Date: 17.08.2017

TO

Mr. E. Prabhakar Reddy
Professor/Biochemistry,
BIHER.

Thro: Concern Head of the Department

Greetings!!!

We are happy to announce that the Research Advisory Committee has approved your proposal for Seed Money Scheme-2015 which was presented by you. You are requested to complete the proposal and send the progress report to the Dean Research in the prescribed time period.

Title of the Project: Dietary: Nutritional Principles and Exercise Habits of Type 2 Diabetes in Puducherry Population

Seed Money Amount: Rs.1, 00,000/- (Rupees One Lakh Only)

Approved on: 02.08.2017

Payment details:

Voucher No.37 **Dated: 30.08.2017**

With Regards

Dean-Research

Bharath University

SELAIYUR, CHENNAI - 600 073, TAMIL NADU, INDIA.

CASH / PAYMENT VOUCHER

Date 30/8/2017

V.No. 37

Debit _____ Amount

Rs.

PAID TO Dr. E. prabhakar Reddy

RUPEES One lakh only

TOWARDS Seed money Scheme - 2015

BHARATH UNIVERSITY CHENNAI 600 073. INDIA.

Authorised by | Finance Manager | Cashier/Accountant | E. Prabhakar Reddy Payee's Signature

PROPOSAL SUBMISSION

1. **Details of Principal Investigator**

Name	: Dr. E. Prabhakar Reddy
Designation	: Professor
Highest Qualifications	: Ph.D.
Department	: Biochemistry
E-mail	: drpebyreddy@gmail.com
Contact no	: 9159186879
Date of Joining	: 21.10.2009

2. **Details of Co-Principal Investigator**

Name	: Dr. A. Vaithiyalingam
Designation	: Professor
Highest Qualifications	: MD
Department	: Orthopedics
E-mail	: drvaithiyalingam@gmail.com
Contact No	: 9500077553
Date of Joining	: 26.10.2009

Technical details

1. Introduction:

Type 2 diabetes is the fourth or fifth major cause of death in most developed countries, and there is growing evidence that it has reached epidemic proportions in many developing countries (1- 4). Type 2 diabetes results from an interaction between a genetic aptitude, high-risk behaviors and environmental risk factors (5). Several lifestyle factors affect the incidence of type 2 diabetes. Obesity and weight gain significantly increase the risk (6-8), and physical inactivity further elevates the risk regardless of obesity (9, 10). Cigarette smoking is associated with a small increase (6, 11), and moderate alcohol consumption with a decrease (11, 12) in the risk of diabetes. In addition, a low fiber diet with a high glycemic index has been associated with an increased risk of diabetes (13), and specific dietary fatty acids may differentially affect insulin resistance and the risk of diabetes (14, 15). It is also known that lifestyle, and particularly dietary habits, play an important role in the development of diabetes. People with diabetes have to understand the ways and means to alter their dietary habits and to adjust to deviations from their daily routine. The prevalence of diabetes is rapidly rising all over the globe at an alarming rate. According to the International Diabetes Foundation (IDF), the total number of diabetic subjects is to be around 40.9 million in India at present which is expected to rise to 69.9 million by the year 2025. Diabetes mellitus is a group of metabolic disorders of carbohydrate characterized by hyperglycemia. Diabetes is associated with various micro vascular and macro vascular complications. Now the Fastest culture in the cities develops and moves from traditional to modern living life style in the diet and physical activity. Diet and exercise are important components of the treatment strategy for adults with type 2 diabetes. Both are important factors for treatment to adults with type 2 Diabetes and it improves the insulin sensitivity and glycemic control and it decreases the medications and insulin. Faulty diet makes the best of medicine in effective. Based on this our study focused on dietary habits and exercise behavior of type 2 diabetes.

2. Review of status of Research and Development in the subject

Brunton S. Implementing treatment guidelines for type 2 diabetes in primary care. Postgrad Med. 2009; 121(2):125-38.

An appropriate lifestyle and dietary changes have proven to be effective for the prevention and management of diabetes mellitus [14, 15, and 16]. Medical nutrition therapy (MNT) is an essential component of diabetes management that comprises counseling and recommendations for dietary intake and nutrition goals by a registered dietician (RD) or a nutrition expert to optimize metabolic control and maximize treatment outcomes. It includes designing of diet plans individualized per patient needs along with regular monitoring by the RD and diabetologist [17, 18, and 19]. Thus, MNT involves integrated efforts from the RD and diabetologist along with patient self-management and conscientiousness. Clinical evidence

suggests that patients with diabetes receiving MNT achieve a 1–2% decrease in HbA1c, which is comparable to the outcomes of antidiabetic treatment, along with reductions in healthcare costs, attributable to improvements in overall health outcomes and quality of life [20, 21, 22, 23, 24, and 25]. This article is based on previously conducted studies and does not contain any studies with human participants or animals performed by any of the authors.

2.1. International Status:

Globally, 425 million individuals were living with diabetes in 2017, and the numbers are expected to rise to 693 million by 2045. India, with over 72 million people with type 2 diabetes mellitus (T2DM) in 2017, was reported to have the second largest population of individuals living with T2DM [2]. The rapidly changing dynamics of the T2DM pandemic in low- and middle-income countries correlates with the dramatic transition to urbanization; an unhealthy modern diet and low activity patterns are regarded as major drivers. Evidence from several regional epidemiologic studies suggests that urban locales in India harbor more people with T2DM than the rural areas. A recent study supported by the Indian Council for Medical Research-India Diabetes (ICMR-INDIAB) estimates the prevalence of T2DM in India to be 7.3% (95% CI 7.0–7.5) [7]. Replacements of traditional Indian meals and recipes that include legumes, coarse cereals, whole grains, fruits and vegetables with modern foods comprising refined carbohydrates, added sugars and high intake of fats have occurred concurrently with the rising trend in diabetes. In addition, the exponential expansion of fast food establishments and supermarkets has allowed easy access to westernized foods. Excessive consumption of sugar and jaggery-laden sweets that have significant cultural and religious relevance in India is an inherent part of the common Indian diet and has contributed to the high prevalence of metabolic disturbances in the Indian population.

2.2. National Status:

NIL

3. Progress/ achievement so far, if any

a). Reference papers was collected.
b). Literature survey was studied.
c). Materials and methods were designed.

4. Work plan

4.1 Methodology

The total study was conducted in the SLIMS of puducherry for type 2 Diabetes patients in 30 Male and 30 Female, The patients were taken into the study with informed consent. For the present study, only the male subjects were selected. The age groups selected were 35-45, 46-55 and 56-65 years and categorized as young, middle and old aged diabetic subjects. All the human volunteers were issued with a questionnaire to determine the eligibility for participation in the study. The questions elicited vital information on age, body weight, height, exercise, habits, health status, smoking habit, alcohol intake and the use of dietary supplements. Physically active diabetic subjects with the habit of walking for at least 30 min / day or 2 days once were included for the investigation. Written informed consent was obtained from all the participants of the study after providing sufficient explanation for participation in the study.

The blood sample was collected from the subjects using the method described by NCCLS [9]. The blood was collected by venous arm puncture after an overnight fasting. The puncher site was then cleaned with an antiseptic spirit and tourniquet was placed around the upper arm, i.e. 4 inches above the intended puncture site to obstruct the return of venous blood to heart and to distend the vein. A needle was inserted into the vein and blood was collected using a syringe. During the procedure, the tourniquet was removed and samples of blood were collected into clean labeled capped tubes for estimation of various parameters. Plasma and serum were separated by centrifugation at 1300 x g for 15 min and stored at 40C until analysis for nutritional biomarkers.

The level of plasma vitamin C was determined by the method of Omaye et al. [10]. Ascorbic acid is oxidized by copper to form dehydroascorbic acid and diketoglutaric acid. These products when treated with 2, 4-dinitrophenyl hydrazine (DNPH) form the derivatives bis-2, 4-dinitrophenylhydrazone which undergoes rearrangement to form a product with an absorption maximum at 520nm. Thiourea provides a mild reducing medium that helps to prevent interference from non-ascorbic acid chromogens.

Vitamin E was estimated in plasma using the method of Desai [11] based on the classical Emmerie Engle reaction. This method involves reduction of ferric ions to ferrous ions by the tocopherol and the formation of a pink colored complex with bathophenanthroline orthophosphoric acid. Absorbance of the stable chromophore is measured at 536nm. 8 Carotene was determined by the method of Bayfield and Cole [12]. Vitamin A undergoes protonation to form anhydrovitamin with strong trichloroacetic acid. The transient blue colour of the carbonium ion was measured colorimetrically at 620 nm.

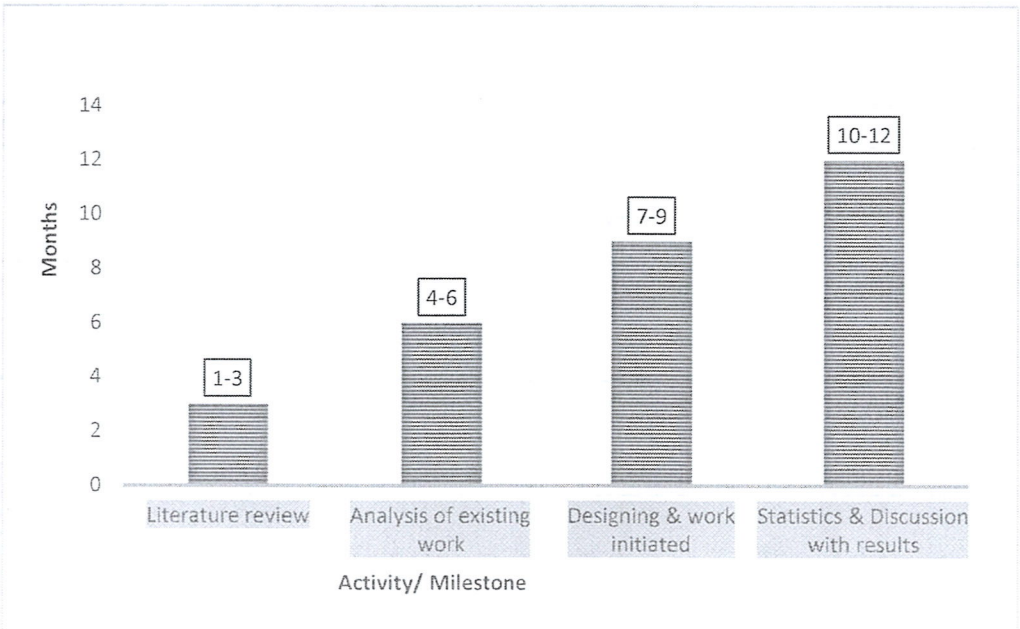
The folic acid in the blood plasma was determined by enzyme linked immunosorbent assay (ELISA) method [13].Folic Acid quantitative test is based on the principle of the ELISA. A folic acid conjugate is bound on the surface of a microtiter plate. Folic acid containing samples or standards and an antibody directed against folic acid are given into the wells of the microtiter

plate. Immobilized and free folic acid competes for the antibody binding sites. After one hour incubation at room temperature, the wells are washed with diluted washing solution to remove unbound material. A peroxidase conjugate against the antibody is given into the wells and after hour incubation, the plate is washed again. Then a substrate solution is added and incubated for 20 minutes, resulting in the development of a blue colour. The colour development is inhibited by the addition of a stop solution, and the colour turns yellow. The yellow colour is measured photometrically at 450 nm. The concentration of folic acid is indirectly proportional to the colour intensity of the test sample.

The data collected in the present study were carefully categorized, segregated and statistically analyzed. The values are expressed as Mean ± Standard Deviation. Further, the values were analyzed by one way analysis of variance (ANOVA) using SPSS version 12.0 for windows and the levels of significances were noted

4.2 BAR diagram. (Maximum of 1/2 pages)

S. No	Activity/ mile stolen	1st Year			
1	Literature review	**1-3 month**			
2	Analysis of existing work	-	**4-6 month**		
3	Designing & work initiated	-	-	**7-9 month**	
4	Statistics & Discussion with results	-	-	-	**10-12 month**



4.3 Expected outcome within the time period of See Money Scheme

Who are all educators and working people, they were aware of diet and exercise. Who are all coming from village patients (24 nos.) were not aware of exercise, But they are working in the agriculture paddy field to consume the food. Who are all living in the city their lifestyle habits were changed but in that very few are going for exercise? Our conclusion is to increase the awareness programme in and around the Puducherry population, prevention of diabetes and management of diabetes in Puducherry.

5. Suggested Plan of action stating the name of funding agency where the project will be communicated for financial support within the time period of project.

Nil

6. Bibliography: Nil

Nil

7. List of Projects submitted/implemented by the Investigators (Separate for Pi and Co-PI)

7.1 Details of Projects submitted to various funding agencies:

S.No	Title	Cost in Lakhs	Month of Submission	Role as PI/Co-PI	Agency	Status
1	NA	NA	NA	NA	NA	NA

7.2 Details of Projects under implementation

Sl. No.	Title	Cost in lakhs	Duration	Role as PI/ Co-PI	Agency
1	NA NA	NA	NA	NA	NA

7.3 Details of Projects completed during the last 5 years

Sl. No.	Title	Cost in lakhs	Duration	Role as PI/ Co-PI	Agency
1	NA	NA NA	NA	NA	NA

8. List of publications published by the Investigators, if any:

a) Principal Investigator

S. No	Author names	Title of paper	Name of Journal	Vol (Issue)	Page No.	Year
	S. V. Rama RaoA,B, M. V. L. N. RajuA, B. PrakashA, U. RajkumarA and **E. P. K. ReddyA**	Effect of supplementing moringa (*Moringa oleifera*) leaf meal and pomegranate (*Punica granatum*) peel meal on performance, carcass attributes, immune and antioxidant responses in broiler chickens	Animal Production Science	8(5)	1-7	2018
1.	Kalpana Thalaval, ***E Prabhakar Reddy2**, and A Vaithilingam3.	HCG and CA-125 Levels In Pregnancy And Abortion Patients.	Research Journal of Pharmaceutical, Biological and Chemical Sciences	8(2)	2745-2749	2017
2.	1B. Sai Ravi Kiran*, 2T. Mohana Lakshmi, 3R. Srikumar, **4E. Prabhakar Reddy**	Total Antioxidant Status and Oxidative Stress in Diabetes Mellitus and Metabolic Syndrome	International Journal of Pharmaceutical Sciences Review and Research	40(1)	271-277	2016
3.	V Kowsalya, R Vijayakumar, R Chidambaram, R Srikumar, **E Prabhakar Reddy,** S Latha, I Gayathri Fathima, C Kishor Kumar	A study on knowledge, attitude and practice regarding voluntary blood donation among medical students in Puducherry, India.	Pakistan Journal of Biological Sciences	16(9)	439-442	2013

9. Budget

SI. No	Head	Amount (Rs.)
1	BP Apparatus, Stethoscopes, Body weight weighing machine, SPSS version 16 Chicago, IL, USA, ECG machine	50,000/-
2	Consumables (gels bottles, cotton, sprit, testing charges, tools, etc.)	25,000/-
3	Travel support for the purpose of research work.	10,000/-
4	Contingency	10,000/-
5	Others consumables	5,000/-
	Total	**1,00,000/-**

*In case of any joint proposal for purchasing a same equipment, each of the associated PLs is also required to give separate budget (without any clubbing) to avoid any ambiguity, if all the associated projects are not awarded by committee.

10. Name of at least two subject experts from the Institute and one from the outside Institute with their contact details:

1. **Dr. Seshadri Reddy** Assistant Professor, Dept of Biochemistry AIIMS Deoghar **Mobile No**: 8106145001 **E-mail id:** lifeschemistry@live.com	2. **Dr. Manne Munikumar** Data Manager (Bioinformatics) Clinical Division, ICMR-National Institute of Nutrition Jamai-Osmania (Post) Hyderabad-500007, Telangana **Mobile No**: 9492373997 **E-mail id:** mannemk@gmail.com

CERTIFICATE FROM THE INVESTIGATOR

Project Title: Dietary: nutritional principles and exercise habits of type 2 diabetes in puducherry population

It is certified that

1. I do hereby agree to submit a complete proposal for financial support to the external funding agency within the time period of SMS-2015.
2. I undertake that spare time on equipment procured in the project will be made available to other users.
3. I agree to submit a certificate from Institutional Biosafety Committee, if the project involves the utilization of genetically engineered organisms. I also declare that while conducting experiments, the Biosafety Guidelines of Department of Biotechnology, Department of Health Research, GOI would be followed in to.
4. I agree to submit ethical clearance certificate from the concerned ethical committee, if the project involved field trails/experiments/exchange of specimens, human & animal materials etc.
5. I agree to abide by the terms and conditions of SMS-2015, BIHER, and Chennai.

Name and signature of
Principal Investigator

Name and signature of
Co-Principal Investigator

Date: 12.07.2017
Place: Pondicherry

Forwarded by Head of the Department

Signature of the Head

DEAN
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
KOODAPAKKAM POST,
PUDUCHERRY - 605 502

PROJECT EVALUATION FORMAT

Recommendation sheet

Name of the Principal Investigator	Dr. E. Prabhakar Reddy
Name of the Co-Principal Investigator	Dr. A. Vaithiyalingam
Name of the Department	Biochemistry
Title of project	Dietary: nutritional principles and exercise habits of type 2 diabetes in puducherry population
Recommendation of the evaluation committee (Recommended/Revision/Not Recommended)	Recommended
Financial allocation recommended	Rs 1,00000/-

SI. No.	Head	Amount
1	BP Apparatus, Stethoscopes, Body weight weighing machine, SPSS version 16 Chicago, IL, USA, ECG machine	50,000/-
2	Consumables- Gel bottles, cotton, sprit, testing charges, tools, etc.	25,000/-
3	Travel support for the purpose of research work.	10,000/-
4	Contingency	10,000/-
5	Others consumables	5,000/-
	Total	**1, 00, 000/-**

Name and Signature of the Research Advisory Committee members with date.

Internal Quality Assurance Cell IQAC Pondicherry-02 SLIMS

(Dr. G. Jayalakshmi)