

ALZINFO-2013



2nd Annual Programme on Awareness of Alzheimer's disease



25th September, 2013.

SOUVENIR



World Alzheimer's Day

*"Life lived for other's is a life worthy"
"Care them with love,
Make them to survive in the society"*

Organized by

Molecular Gerontology Laboratory
Department of Biochemistry
(DST-FIST Sponsored)
School of Life Sciences
Bharathidasan University
Tiruchirappalli-620024

Venue: Seminar hall, Department of Biochemistry, Bharathidasan University
Tiruchirappalli – 620 024, Tamil Nadu, India.

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"Over the next century, experts estimate that Alzheimer's disease will be more prevalent than AIDS, Cancer and all cardiovascular disease's"

- **World Health Organization**



ALZINFO-2013

*Cordially Invites You
For the*



2nd Annual programme on awareness of Alzheimer's disease

25th September, 2013



World Alzheimer's Day

Worn to show support, and give strength to those in need, and to help promote hope in finding a cure



*Organized
by*

Molecular Gerontology Laboratory

Department of Biochemistry (DST-FIST Sponsored),
School of Life Sciences, Bharathidasan University,
Tiruchirappalli-620024

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Bio Park

Organizing committee

Convenor

Dr.Vasanthi Nachiappan,
Professor & Head,
Biomembrane lab,
Department of Biochemistry,
Bharathidasan University.

Organizing Secretary

Dr.M.Anusuyadevi Jayachandran,
Assistant Professor,
Molecular gerontology lab,
Department of Biochemistry,
Bharathidasan University.

Executive Members:

Dr. Prahalathan Chidambaram, Assistant Professor, Dept. of Biochemistry

Dr. V. Ravikumar, Assistant Professor, Dept. of Biochemistry

Dr. A. Antony Joseph Velanganni, Assistant Professor, Dept. of Biochemistry

Members of the Committee:

P. Premkumar - Ph.D., Research Scholar

M. Sathya - Ph.D., Research Scholar

C. Karthick - Ph.D., Research Scholar

P. Moorthi - Ph.D., Research Scholar

P. Vidhya - Ph.D., Research Scholar

S. Periyasamy - Ph.D., Research Scholar

Research Scholars, M.Phil. and M.Sc., Students of Dept. of Biochemistry

Contents

1. Messages

1.1	Dr.M.V.Rao	Co-ordinator, School of Life Sciences, Bharathidasan University.	1
1.2	Dr.VasanthiNachiappan	Professor and Head, Dept. of Biochemistry, Bharathidasan University	2
1.3	Dr.M.Anusuyadevi Jayachandran	Assistant Professor, Dept. of Biochemistry, Bharathidasan University	3
1.4	Dr.Prahalathan Chidambaram	Assistant Professor, Dept. of Biochemistry, Bharathidasan University	4
1.5	Dr.V.Ravi Kumar	Assistant Professor, Dept. of Biochemistry, Bharathidasan University	5
1.6	Dr.A.Antony Joseph Velangnni	Assistant Professor, Dept. of Biochemistry, Bharathidasan University.	6
1.7	Dr. S. Shila	Research Scientist, VRR INSTITUTE OF BIOMEDICAL SCIENCE	7
1.8	Dr. J. Tamilselvan	Assistant Professor, Centre for Biotechnology Anna University	9
1.9	Dr. P. Kalaiselvi	Assistant Professor, Department of Medical Biochemistry, University of Madras	10
2.0	Dr.K.S.Jayachandran	Assistant Professor, Dept. of Bioinformatics, Bharathidasan University.	11

2. ALZINFO

2.1	History of ALZINFO		14
2.2	Inaguration-ALZINFO-2011		14
2.3	ALZINFO 2012		17
2.4	ALZINFO 2013		19

3. Special Lecture

3.1	Dr. R. Boopathy <i>Retired Director Biotechnology and Genetic Engineering Bharathiar University, Coimbatore</i>	Exploiting small molecules as Acetyl cholinesterase inhibitors in the treatment of Alzheimer's disease	21
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4. Contribution by students for awareness on Alzheimer's disease

4.1	New ideas		23
4.2.	Poem describing the status of old age people in India		26
4.3	Thematic diagrams		33
5.	Sponsors		39



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BHARATHIDASAN UNIVERSITY

Dr. M. V. Rao

Co-ordinator

M.Sc., Life Sciences (Five Year Integrated) Programme

Centre of Excellence in Life Sciences



MESSAGE

Alzheimer's disease (AD), the most common form of dementia, was first described by German psychiatrist and neuropathologist **Alois Alzheimer** in 1906 and was named after him. The most common symptom is difficulty in remembering recent events and as the disease advances, symptoms can include confusion, irritability, aggression, mood swings, trouble with language, and long-term memory loss. Gradually, bodily functions are lost, ultimately leading to death. The cause and progression of Alzheimer's disease are not well understood. Research indicates that the disease is associated with plaques and tangles in the brain. The disease is diagnosed in people over 65 years of age, although the less-prevalent early-onset Alzheimer's can occur much earlier. There are currently estimated to be more than 36 million people worldwide living with dementia. The number of people affected is set to rise to over 115 million by 2050. There are no available treatments that stop or reverse the progression of the disease. Mental stimulation, exercise, and a balanced diet have been suggested as ways to delay cognitive symptoms in healthy older individuals, but there is no conclusive evidence supporting an effect. **The family carers are the most in need of the AD patients, besides friendship groups and communities.**

I am very happy to learn that the Department of Biochemistry is organizing Second Departmental event on Awareness of Alzheimer's disease "ALZINFO 2013" on 25th September 2013 on behalf of world Alzheimer's day. I wish the organizing committee for the successful event on Awareness of Alzheimer's disease.

(M.V.RAO)

Dr.VasanthiNachiappan

Professor and Head
Department of Biochemistry
Bharathidasan University



MESSAGE

It gives me immense pleasure to invite you all for the event on “awareness on Alzheimer’s Disease – ALZINFO” conducted by our Biochemistry Department every year since 2011. This event creates awareness about Alzheimer’s disease. The event will provide an effective platform for the young graduate students to identify new areas and will open up new avenues in the young minds.

My hearty congratulations to the organizer, for the initiatives and efforts taken to organize such an event.

I wish this event a grand success.

Vasanthi Nachiappan

Dr.M.Anusuyadevi Jayachandran

Assistant Professor,
Department of Biochemistry,
Bharathidasan University



MESSAGE

*"THERE ARE ONLY FOUR KINDS OF PEOPLE IN THE WORLD
THOSE WHO HAVE BEEN CAREGIVERS
THOSE WHO ARE CURRENTLY CAREGIVERS,
THOSE WHO WILL BE CAREGIVERS
AND THOSE WHO WILL NEED CAREGIVERS"*

- ROSALYNN CARTER

AD begins slowly. AD usually begins after age 60. The risk goes up as one gets older. The risk is also higher if a family member has had the disease. It first involves the parts of the brain that control thought, memory and language. There is no cure for the disease, which worsens as it progresses, and eventually leads to death. The vast population of India (world's 2nd largest) is facing a crisis among the elderly and infirm. The crisis is that the terrible degenerative disease of Alzheimer's can affect anyone who ages beyond 65 without warning and lingers until it takes its final, terminal toll on the victim. Health issues are unexpected but it is our responsibility to be prepared to overcome them. It is estimated that by the year 2020, approximately 70% of the world's population aged 60 and above will be living in developing countries, with 14.2% in India. Currently 35 million people worldwide have Alzheimer's disease. Alzheimer's, now the fifth leading killer, rose 47% from 2000 to 2006. 54% of the U.S. population has been touched in some way by Alzheimer's. A recent study from the department of neurosciences, SCTIMST, Kerala has given a severe warning about the development of the AD in the southern part of the country which has to be taken as a very serious issue. Urbanization and migrating population towards the city, and development of the socio-economical status of the lower income group and middle income group population leads to the formation of nuclear families, ultimately leaving the elderly population without care. In most of the conditions, it was reported that AD is worst among the aged population those who left without care. Vice versa it was reported that the patients with AD can survive happily when there is a proper support from the family members.

As an organizing secretary, I would like to take a serious attempt in creating complete awareness among the public by organizing events like ALZINFO and by continuing our journey in surveying various parts of Tamilnadu for Alzheimer's disease. Hope these events will help us to take initiative for elderly care. I thank the scientific community and students actively involved in making the event a grand success.

Dr. C. Prahalathan
Assistant Professor,
Department of Biochemistry,
Bharathidasan University



MESSAGE

Alzheimer's disease is a progressive brain disease and is becoming a major public health issue worldwide. The current scenario shows that the prevalence of Alzheimer Disease is increasing day by day. Alzheimer's organizations around the world concentrate their efforts on raising awareness about Alzheimer's and dementia on World Alzheimer's Day. I am very happy to learn that an awareness programme on Alzheimer's disease is being organized on world Alzheimer's day as "Alzinfo 2013' by Dr. MAJ's Molecular Gerontology Lab. This kind of awareness programme will help the people to identify the disease, so that early treatment may cover at least its behavioral aspect properly. I wish the 'ALZINFO 2013' a grand success.

Dr. C. Prahalathan

Dr. V. Ravikumar

Assistant Professor,
Department of Biochemistry,
Bharathidasan University



MESSAGE

Alzheimer's disease is the 6th leading cause of death in the United States overall and the 5th leading cause of death for those aged 65 and older. It is the only cause of death among the top 10 in America without a way to prevent it, cure it or even slow its progression. Deaths from Alzheimer's increased 68 percent between 2000 and 2010. While ambiguity about the underlying cause of death can make it difficult to determine how many people die from Alzheimer's, there are no survivors. If you do not die from Alzheimer's disease, you die with it. One in every three seniors dies with Alzheimer's or another dementia. The treatments for Alzheimer's diseases offer relatively small symptomatic benefit but remain palliative in nature. Many organizations around the globe keenly involved in generating awareness among the people about this disease. I am very much happy to know that such an awareness programme on Alzheimer's diseases is being organized by Dr. M. Anusuyadevi Jayachandran, Molecular Gerontology lab, Dept. of Biochemistry, Bharathidasan University. This kind will motive common population to join their hands with the people fighting against Alzheimer's disease. I escalate Dr. M. Anusuyadevi Jayachandran and team for their effort and wish them all success.

Dr.A.Antony Joseph Velanganni,
Assistant Professor,
Department of Biochemistry,
Bharathidasan University.



MESSAGE

Alzheimer's disease is the most common form of dementia among senior citizens. It affects part of brain that control memory and can seriously affects person day to day activities in their life. According to WHO, about 3.5 million people have Dementia worldwide and most of them are living in developing countries like our India. Hence a coordinate approach involving public needed to be address Alzheimer's disease and its consequences on individual, families and healthcare system. I am happy to know that the members of Molecular gerontology lab organizing awareness programme on Alzheimer's disease .I hope the awareness programme will create an impact among the students and researchers .I am very much happy to convey my best wishes for the successful conduct of Awareness programme on Alzheimer's disease



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Dr. S. Shila

Research Scientist

LAST OF ALL

What it's like to have our life taken away from us before we die. And how it is to lose a lifetime of memories before we lose our life? Yes, Alzheimer's disease (AD) is devastating to the core! Every five years beyond age 65, the risk of developing AD doubles. The bad news is that the number of affected individuals has increased geometrically with the linear increase in life expectancy during the past century. The good news will be that if we can delay onset of disease by 5 years we can cut the number of people afflicted with disease in half. The therapeutic treatment advances for aging in the near future, people will mostly live longer and the world may soon be facing the daunting challenge of dealing with the new population of AD.

Much research has been going on in this field since the awareness of the disease. Intense areas of research are focusing on agents that prevent β amyloid build-up, its toxic effects on nerve cells, or other mechanisms of the disease process including action on other neurotransmitter systems. AD is due to reduced synthesis of the neurotransmitter acetylcholine. The enzymes, Acetyl cholinesterase (AChE), and Butyryl cholinesterase (BuChE) levels are significantly increased. Cholinesterase inhibitors like tacrine, donepezil, rivastigmine, and galantamine are drugs that act in the AChE and BuChE, were developed.

During 1990's researchers proposed amyloid ($A\beta$) plaque deposition and formation of paired helical filaments due to tau hyper phosphorylation as the pathological features of AD. During these periods, research was mainly focused on development of inhibitors for β and γ secretases. $A\beta$ targeted immunotherapy was developed. The disadvantage of immunotherapy was that the $A\beta$ accumulated in blood vessels. The efficiency of this kind of therapy was too low to improve the clinical outcome. Later stages of research identified mutations in Presenilins (PS) and Amyloid precursor proteins that are causative factors for AD. PS are parts of γ secretases complex. Loss of PS function ultimately leads to age-related, progressive neurodegeneration characterized by loss of synapses, dendrites, and neurons.

AD is so devastating that there is a great public interest in the drug discovery process as evinced by the sheer number of articles in the serious popular press. The presently available, yet poorly performing, drugs have been approved despite their multiple peripheral side effects. An incipient understanding is

that we may start to treat AD too late to be able to make any significant slowing of the disease or postponing the onset of the symptoms of the disease. But we are treating AD patients only after A β peptide in its different oligomeric and aggregate forms has already killed too many neurons when it is too late. Although we have some minimal ability to generate new neurons, but nowhere close to replacing the lost neurons in AD with new ones in the right place in the network to restore memory function.

For nearly three decades the dominant trends have been to interpret AD-associated abnormalities, namely the tau phosphorylation and A β PP-A β deposition as causal rather than consequential to the neurodegeneration cascade. On the other hand, due to collected contributions of a number of researchers, the field has recently become more receptive to alternative concepts, opening the doors to exciting new avenues of investigation and therapeutic strategies. During the last decade, confirmation has rapidly accumulated that insulin acts in the brain, and promotes learning and memory. Defective insulin receptor signalling is associated with the dementia in normal aging and patients with age-related neurodegenerative diseases like Alzheimer's disease.

Last of all, recent evidence supports the concept that AD represents a metabolic disease which has been linked to brain insulin resistance and insulin-like growth factor mediated insulin resistance with disruption of signaling pathways that regulate neuronal survival, gene expression, and plasticity, which could simplify future approaches to treatment and prevention of this disease.

Of all these inventions, after huge struggle by scientists around the world, the success stories can be made only through programs that promote awareness among the world population about AD and its consequences, particularly in the developing countries, where there is an increased threat of AD in near future. I am happy to know that Molecular Gerontology Group is contributing its efforts in creating awareness in developing country like India. I wish them all success.



(Dr.S.Shila)



Message



“Age is an issue of mind over matter. If you don't mind, it doesn't matter “

- **Mark Twain**

But Alzheimer's is a disease that causes aged people to eventually lose every aspect of their minds: their personalities, emotions, memories, and thus matter much even if the one doesn't mind it. Even after a century of research after Alois Alzheimer, a German psychiatrist and neuropathologist, first described Alzheimer's disease (AD) pathology, we are still in the hunt for an effective diagnosis and therapeutic strategy for this daunting disease.

In simple terms AD is the most common form of dementia, a general term for memory loss and other intellectual abilities serious enough to interfere with daily life. AD accounts for 50 to 80 percent of dementia cases. The number of people living with dementia worldwide is currently estimated at 35.6 million. This number will double by 2030 and more than triple by 2050 implicating that research into this subject is of immediate importance.

Abnormal levels of amyloid and tau proteins in the brain —two hallmarks of the disease—are of intense interest to researchers. These proteins build up when enzymes called proteases snip the amyloid proteins into smaller pieces. Yet, when these snippets are not disposed of at a rate than they are produced, the pieces begin to stockpile and accumulate. There is not much knowledge as to why this happens, but there are implications in studies that about one half to three fourths of one's risk for developing Alzheimer's is inherited. Although the greatest known risk factor is increasing age, and the majority of people with Alzheimer's are 65 and older, Alzheimer's is not just a disease of old age. Up to 5 percent of people with the disease have early onset Alzheimer's (also known as younger-onset), which often appears when someone is in their 40s or 50s. Better understanding of the genetic and lifestyle causes that lead to AD even in those "too young" to have the disease, will all lead to improved diagnosis, therapies, and perhaps, even a cure for Alzheimer's and other dementia-related illnesses for those of all ages.

I Hope this conference of September, which incidentally is the “World Alzheimer's month” sets a platform for the young and enthusiastic minds to solve this century old problem of amyloid matter over mind.



Message for World Alzheimer's day, September 2013

Dr. P. Kalaiselvi

With immense pleasure, I whole heartedly congratulate the team behind this great effort on conducting the department event on Alzheimer's disease. India, being the second largest populous and aging country is encountering many age associated problems. One such is Alzheimer's disease, which is a progressive, irreversible brain disease that slowly destroys memory and thinking skills that affects people of all racial, economic, and educational backgrounds. Although Alzheimer's primarily affects people age 60 or older, it also may affect people in their 50s and, rarely, even younger. There is no "typical" person with Alzheimer's disease. There is tremendous variability among people with Alzheimer's in their behaviors and symptoms. People with Alzheimer's disease have memory problems and cognitive impairment (difficulties with thinking and reasoning), and eventually they will not be able to care for themselves. They often experience confusion, loss of judgement, and difficulty finding words, finishing thoughts, or following directions. These disabilities are very difficult, not only for the person with Alzheimer's, but for the caregiver, family, and other loved ones as well. It is very difficult to predict what a person with Alzheimer's might do and how the disease will progress. As Tia Walker, a care taker has stated, "To care for those who once cared for us is one of the highest honors." management of Alzheimer's disease with active care-giving, change in the environment might moderate the severity of the disease and is a painful job and not a solution for it. As an ounce of prevention is worth a pound of cure, research pertaining to this domain shall be triggered to achieve quality in aging. In this regard, I congratulate the organizers of this function, who have involved themselves in many hardships to organize this event as well as engage themselves in remote areas of research. Identification of BACE inhibitors will help us to apprehend the onset and progression of Alzheimer's disease. Organizing such events may throw awareness about the Alzheimer's disease and help us to combat with obscurity associated with the complications of this elderly population.

Once again, I congratulate the Organizers for providing a platform on this remote area of research and wish them a grand success.

Chennai

September 24, 2013

P.KALAISELVI

Assistant Professor
Department of Medical Biochemistry
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Dr.K.S.Jayachandran,
Assistant Professor,
Department of Bioinformatics,
Bharathidasan University



MESSAGE

It gives me an immense pleasure to write a message on special event “ALZINFO-2013” and I congratulate organizing members of “ALZINFO” for its consecutive success. Alzheimer’s disease is a major socio-economic problem. Alzheimer’s is the most common form of dementia among elderly people, but the cause of AD is not in lime light. In AD, over time, symptoms get worse. Eventually, they need total care. This can cause great stress for members who must care for them. No treatment can stop this disease. However, current medication may help to keep symptoms from getting worse for a limited time. Today’s obesity epidemic may be tomorrow’s Alzheimer’s epidemic, our overall health habits can help to reduce the risk of age-related illnesses.

In India 1 in 24 people over 60 years and 1 in 5 above 80 years are affected with Alzheimer’s. Currently 3.7 Crores were affected. It is expected that in the next twenty years the numbers of persons affected will be doubled. It’s becoming an enormous burden to the country. Unless we plan now there is going to be a catastrophe. It’s going to take all of us to change these figures. So now this is the time to raise the awareness. On this occasion let us join together for the great cause and enhance our research to eradicate the deadly disease.

I will be happier if the department is coming out with positive research on Alzheimer’s disease. I would like to applaud Dr. M. Anusuyadevi, Organizing Secretary for conducting the event on AD and creating awareness among the public. Let’s create the brave and Alzheimer’s free world.

I wish the event a great Success.

Molecular gerontology lab

Molecular Gerontology (study of aging) lab has been recently established in Department of Biochemistry. The principal investigator of this lab is Dr. M. Anusuyadevi Jayachandran. From the recent data it was found that around 4.6 million people were affected per year worldwide. **In India**, about 3.7 million people were affected by this disease till now. It was estimated that by 2050, hundred million people will be affected by this disease globally. In our country the research and statistics regarding Alzheimer's disease is limited only because of the unawareness. This motivated us to focus on Alzheimer's disease (AD) related research. The major risk factor for AD is "aging". During aging, the lot of metabolic pathway takes an alternative path which leads to several diseases like Neurodegenerative disorders, cardiovascular disease, Diabetes etc. Alzheimer's disease is one of the neurodegenerative disorders which take an abnormal pathway during aging. Therefore the aim of our lab is to explore and target the possible biochemical mechanisms and pathogenesis involved in Alzheimer's disease. In addition to this we focus on obtaining a clear statistical data about Alzheimer's patients in various parts of Tamilnadu. Initially we started our survey in Dharmapuri district along with Aarokiyam charitable trust and Dharmapuri Dt. Voluntary agencies network initiatives (DHVANI).



Alzinfo



History of ALZINFO

Alzheimer's disease is the most dreadful disease in the elderly people and represents an important and increasing challenges in terms of diagnosis and treatment. There is an outbreak of its occurrence especially in India. This motivated us to create awareness program, with which "ALZINFO" blossomed. The founder of this program is Dr. Anusuyadevi Jayachandran who has taken all the necessary steps to create the awareness on Neurodegenerative diseases especially Alzheimer's among the public with the support of faculties, Research scholars and students of the department. University has supported this programme with great zeal.

About ALZINFO 2011

The first foundation stone was laid on. September 21 2011. This programme was inaugurated by Dr. K.S. Jayachandran, Assistant Professor, Department of Bioinformatics who was the special guest for the day and Dr. M. Anusuyadevi Jayachandran, Dr. Vasanthi Nachiappan along with all other faculties of Department of Biochemistry enlightened the function by lightning the lamp. The ALZINFO 2011 brochure was released by Dr. Vasanthi Nachiappan and Dr. K. S. Jayachandran.

The eminent personality **Dr. K. S. Jagannatha Rao Ph.D, FNASc, FABP, FLS), director, Institute for Scientific Research and Technology Services (INDICASAT), Panama City, Panama** stated the difficulties in early diagnosis of AD in India and he also suggested that there is a need, of a centre which is, fully dedicated for neuroimaging and psychiatry battery tests for a basic research through his message on ALZINFO 2011.

Our beloved Head of the department, Dr. Vasanthi Nachiappan appreciated the initiative of "ALZINFO" and advised the students to join hands in way of creating awareness among the society. The faculties of the department Dr. C. Prahalathan quoted that the awareness programme helps to control the prevalence of Alzheimer's. Dr. V. Ravikumar Assistant Professor has predicted the severity of Alzheimer's disease and highlighted the poor treatment and awareness worldwide. Dr. Antony Joseph Velanganni, explains the statistics about the dreadful Alzheimer's in India and worldwide and appreciated the initiative.

Our young and dynamic organizing secretary Dr. M. Anusuyadevi Jayachandran reported that aging is the major risk factor for Alzheimer's disease. The pharmacological studies elucidates that there is poor success rate in amyloid therapy. She presented on **"Concepts and facts on Bio Gerontology with special reference to Alzheimer's Disease"** to make the vision wider in the field of Alzheimer's research.

Mr. C. Karthick, Research scholar, Molecular gerontology lab presented about the ***“Historical background of Alzheimer’s disease”*** and Mrs. Sathya Manickam, Research scholar, Molecular gerontology lab presented on ***“The moral challenge of Alzheimer’s disease”***. They highlighted the vulnerability of the Alzheimer’s disease and its background.

Students from the Department of Biochemistry presented posters on various topics such as Mechanism involved in occurrence and treatment of the disease, therapies involved in treatment using phyto-compounds and Insilco research on Alzheimer’s and won several prizes.

ALZINFO- 2011 Brochure release

“The world is not a problem; the problem is your unawareness”



Lighting the lamp



Presenting the Momento's



Poster Presentation



Distributing the Prize

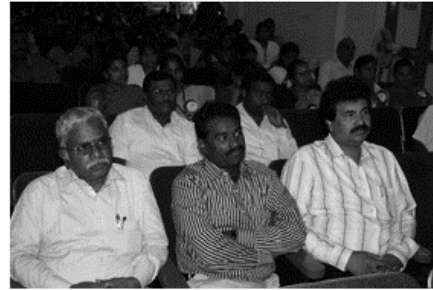


ALZINFO 2012

The budding of ALZINFO 2011 reached all young minds and have largely encouraged them to get energized for the National conference. After the Inaugural event, "**1st Annual seminar on Alzheimer's disease**" was initiated on September 21 2012, the organizing committee sincerely thanked Dr. (Mrs). K. Meena, the then-Vice chancellor of Bharathidasan University, and Dr. Aruchamy, the then-Registrar of Bharathidasan University for permitting us to conduct the National conference. Further, the organizing committee was grateful to Dr.Vasanthi Nachiappan, Professor and Head, and faculties, Department of Biochemistry for giving continuous support and encouragement for conducting ALZINFO. The National conference was sponsored by CSIR, DRDO and Many Companies.

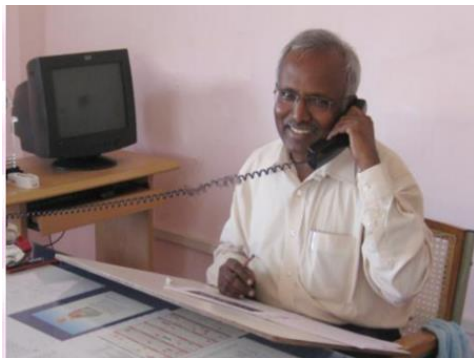
Several eminent professionals of Alzheimer's disease research dedicated their valuable time in sharing their views and information's about AD. This was like a scientific meet on Alzheimer's disease research where several scientist, doctors met and gave their contributions. Of about 198 students all over India participated and among them around fifty students shared their scientific experience which leads to the quest of more innovations.

Dr.R.Sathianathan,[Psych],D.P.M.,M.P.H.,[USA].Former Director, Institute of Mental health Vice Chairman, Alzheimer's and related disorders society of India(ARDSI)-Madras Chapter explained about the advancement in the diagnosis of Alzheimer's disease through his message. **Dr.Ramanujam**, Professor and Head, Department of Mathematics, gave Welcome address for the National Conference. **Dr. H. Devaraj**, Professor, Dept of Zoology, Madras University inaugurated the session and scientific session for ALZINFO 2012 was started by **Dr.Kalluri Subba Rao**, INSA -Hon Scientist, University of Hyderabad gave a scholastic speech in the title of "**Alzheimer's disease - a stochastic product of Pathological aging**" that provoked young minds and faculties. **Dr.Balu Muthaiya**, one of the expert from Industry explained about **Food and Cognition** and **Dr. J.TamilSelvan** from Anna University, Chennai explained about the possible molecular mechanism that accelerates the process of ageing. Immense response from students around India was there. The oral and poster presentations given by the students reflected their passion towards the field that enriched the event. Rewards were given for students who won in oral and poster presentations.



ALZINFO - 2013

As a continuation of our journey in creating awareness on Alzheimer's disease, this year Molecular Gerontology group has organized another departmental event on Alzheimer's disease awareness programme ALZINFO 2013. Today's events highlights the status of awareness among Indian population about Alzheimer's disease. A special lecture by **Dr. R. Boopathy**, Retired Director School of Biotechnology and Genetic engineering, Bharathiyar University, Coimbatore on **"Exploiting small molecules as Acetyl cholinesterase inhibitors in the treatment of Alzheimer's disease"** will top the event. In way of provoking young minds, the students were made to actively participate in events like Quiz competition, brain math and contributions in the form of drawings, write up in the title "Ageing and Alzheimer's Disease". As a key event, we distribute pamphlets highlighting the disease in various places of Trichy District in way of creating awareness to make a point that it is high time for everyone of us to take necessary steps about this disease among the society. The future goal of ALZINFO is to create complete awareness among public initially in regions of Tamilnadu and later throughout India by joining hands with the scientific community and Alzheimer's Society thereby protecting aging population from this dreadful disease in the developing country like India.



Special Lecture

Dr. R. Boopathy

Retired Director

Biotechnology and Genetic Engineering

Bharathiar University, Coimbatore

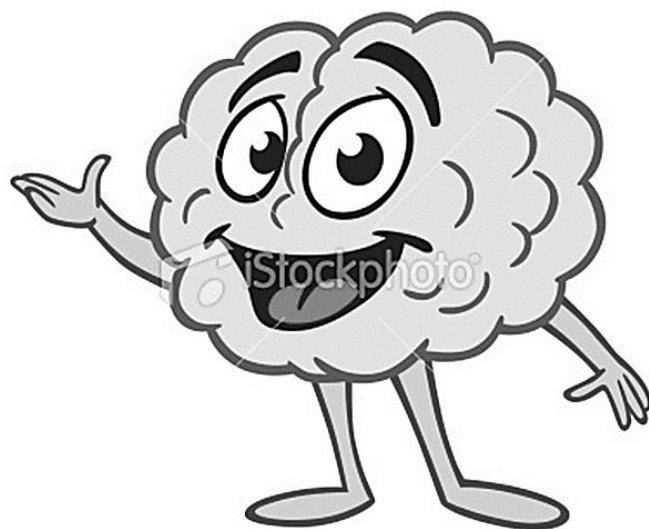
Exploiting small molecules as Acetylcholinesterase inhibitors in the treatment of Alzheimer's disease

Dr. R. Boopathy

Department of Biotechnology, Bharathiar University, Coimbatore.

The cholinergic enzyme, acetylcholinesterase (AChE) and Alzheimer's disease (AD) are associated with each other ever since AChE inhibitors were used to treat the symptoms of this neurodegenerative disease. The hallmark of AD is amyloid beta ($A\beta$) plaques and it is obvious that AChE through its peripheral anionic site (PAS) influences $A\beta$ aggregation by forming a complex with it, thereby playing a major role in AD pathology. The exact cause and mechanism of AD pathology still remains unknown though various concepts such as calcium dyshomeostasis and mitochondrial dysfunction are thought to be involved. Small molecules are being exploited against AChE as means of improving the cognitive status of demented individuals, since AChE inhibitors are the only approved FDA drugs against AD till date. Here, we will discuss about the potency of 1,10phenanthroline, a metal chelator which shows inhibition property on AChE activity by binding to the PAS and might hinder "AChE- $A\beta$ " complex formation and thereby its aggregation. In addition to the above, 12 lead molecules have been identified from ZINC natural compound database through *in silico* screening using multiple pharmacophores which are potential bivalent molecules endowed with dual binding ability for both catalytic site and PAS of AChE. Since the involvement of PAS of AChE in the activity and $A\beta$ aggregation is well documented, molecules binding to PAS can be of immense benefit against this neurological disorder. A comprehensive knowledge gained from such studies could lead to the discovery of effective AChE inhibitors that are highly specific for AD treatment.

Contribution by students for awareness on
Alzheimer's disease



Defensive Measures and Falsehoods of Alzheimer's disease

Chitra .L, Rama. R & Uma Maheswari Nallal. V

I M. Sc. Biochemistry

Alzheimer's disease is the most fatal form of dementia. There is no cure for this disease. Since it has no cure, the main aim of our study is to focus on the available preventive measures which includes both domestic and laboratory approaches. The domestic approach incorporates consuming two cups of hot chocolate per day and doing exercise for 150 minutes each week. The laboratory attempts comprise the discovery of a group of proteins essential to the formation of long term memories: a computer driving game that researches say could be used to improve multi-tasking and cognitive control abilities and so on. An estimated 5.2 million Americans of all ages have Alzheimer's disease in 2013. By 2025, the number of people age 65 and older with Alzheimer's disease is estimated to reach 7.1 million. This instant incipient disease has many myths among the people all over the world. This study also itemizes the prevailing myths on Alzheimer's disease.

RNA Splicing impairment in Alzheimer's disease Patients

Kanimozhi N, Kasthuri G, Deepa K & Bhuvaneshwari V

I M. Sc. Biochemistry

Alzheimer's disease is a type of memory loss occurring in old people who are above sixty years. There is no cure for this disease and eventually leads to death. Causative agents of AD are beta amyloid protein and tau protein hyperphosphorylation. Treatment for this disease is curing β -amyloid, an apparently toxic protein fragment that is the dominant component of amyloid plaques. Now newly identified protein pathology impairs RNA splicing. The tangle like structure of protein appear at early stages of AD and are not found in other neurodegenerative disease (Parkinson Disease) development of AD is not solely explained by amyloid and tau pathologies. Similar amount of amyloid plaques and tau tangles present in 2 individuals. But one may have severe memory loss and other may be completely healthy. So AD is caused by β -amyloid, tau and also U1SnRNP protein which are involved in RNA splicing. In AD patients this U1 protein accumulate in insoluble form and this tangle (clumps), impair the process of RNA splicing AD patients brain RNA sample were compared to normal patients brain sample. RNA from AD patient's brain sample was found to be unspliced. U1 dysfunction might produce changes in RNA processing affecting a few key genes that are important in Alzheimer's. To understand this impairment of such a fundamental process will almost & certainly identify new way to understand AD and new approaches to treating patients.

Acetylcholinesterase inhibitors for Alzheimer's disease

Vinoth Kannan G, Yogeshwaran L, Ibrahim P & Lakshmanan D.

I M. Sc Biochemistry

Alzheimer's disease is an irreversible progressive brain disease that slowly destroys memory and thinking skills. Alzheimer's disease symptoms 1st appears after 60 age. AD is not a part of normal aging. There is no drug to cure the disease up to now. So we have the duty to identify way to treat Alzheimer's disease. Acetylcholine is found in cells called cholinergic neurons. When a cholinergic neuron releases acetylcholine, it latches onto a neighboring neuron at locations called receptors, which are the mechanism needed to pass signals along from cell to cell. In Alzheimer's condition acetylcholine level is decreased. Then we used acetylcholine inhibitors that is mainly get from donepezil, galatnamine, rivastigime drugs. It prevent AD and increased level of acetylcholine in cholinergic neurons. This drugs used for mild and moderate AD.

Alternative hormone replacement therapy applied for the patients with Alzheimer's disease

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In Alzheimer's disease, there is age-related reduction in sex hormone, especially estrogen which represents a critical risk factor. Estrogen has also shown to suppress the increase deposition of β -amyloid and to prevent nerve cell damage. Music therapy for dementia patients can help in the betterment of endocrinological and behavioral evolutions. Hormone replacement therapy (HRP) used for treating Alzheimer's, may be associated with increased risk of carcinogenicity in later life. Hence receptive and active music therapy can act as a potential alternative treatment and also suppresses nerve cell damage. Thus protects nerve cells and helps in terminating the progression of Alzheimer's diseases.

WITHANAMIDES A and C PRESENT IN WITHNIA SOMNIFERA (ASHAWAGANDHA) PLANT IS USED FOR THE TREATMENT OF ALZHEIMER'S DISEASE

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Alzheimer's disease (AD) is a progressive neurodegenerative disorder. It is a common type of dementia and 5th leading cause of death among elderly people. It is characterized by two major pathophysiological processes namely formation of neurofibrillary tangles, caused by hyper phosphorylation of tau proteins and formation of extra cellular plaques caused by the proteolytic processing of amyloid precursor protein. Till to date number of drugs have been approved but with side effects and are hence less beneficial. In order to overcome these limitations, there is a need of extensive research to treat Alzheimer's in an effective manner. A herbal plant, *Withania somnifera* (Ashawagandha) is a member of the nightshade Solanaceae family may have a potential role in treating Alzheimer's disease as it contains steroidal compounds such as withanamides and ergostane-type steroidal lactones. The withanamides have an ability to scavenge free radicals generated during the initiation and progression of AD. Aqueous extracts of this herb has been found to increase cholinergic activity, including increases in the acetylcholine content and cholineacetyl transferase activity. Thus it may help in cognition-enhancing and memory-improvement. A recent double-blind, randomized, placebo-controlled study of the effects of Ashwagandha on stress found that it reduced symptoms of stress and inability to concentrate and reversed forgetfulness in a dose-dependent manner. It was proved that 500 mg/day of this was more effective. This made us to frame an objective of the study as "The effect of withanamides in blocking amyloid plaque formation in Alzheimer's disease". The results had shown that Ashawagandha's steroidal compounds like withanamides A and C uniquely binds to the active motif of beta-amyloid ($A\beta$ 25-35) and prevent fibril formation.

Let's Take a chance!

God created this beautiful earth with so many expectations! Amazing hills, Blissful streams, charming landscapes, enchanting skies and loving people were a part of it! But did he know the fate of people when they forget the wonders of God ??? . Are we ready to forget things and imagine life?? Ofcourse not!

Alzheimers Disease – the most dreadful form of memory loss makes us forget who we are and what we do! It makes us forget our relations, our cognitive skills, our daily life style and so on....

Many people on earth think that forgetting bad memories can bring happiness, but what is the real fall of forgetting things, can be understood only when a person experiences memory loss!!

Alzheimers Disease in general is caused by the accumulation of Beta-amyloid protein, the cause may be simple but the after math of this disease is a situation which can be regarded dangerous!!

A famous proverb says “ Prevention is better than cure”!

Therefore instead of laking a chance of forgetting things that we loved, we can make life happier by taking measure to prevent the disease!!

“LIVE AND LET LIVE!”

DON'T FORGET TO ...

TAKE A CHANCE ...

TO TAKE PREVENTIONS AGAINST...

WHAT YOU ARE ABOUT TO FORGET.

By

UMA MAHESHWARI. V

Ist M.Sc Biochemistry

“நிழல் இல்லாத நான்”

வாழ்க்கையின் நிமிடங்கள் ஆகிவிட்ட
மருத்துவமனை,
பல நேரங்கள்
காத்தியிருப்பிலேயே
கழிந்து விட்டது...

கொஞ்சம்
அதட்டலுடன் என்னை
அழைத்து வந்த மகன்,
தொலைபேசியிலேயே
தொலைத்து விடுகிறான்
நேரத்தை!

அவனை
திட்டியிருக்கிறேன்,
டிபன்பாக்ஸ் கொண்டு செல்ல
மறந்ததற்க்கு...
இன்று,
என் உணவை
சுவைக்க,
மறந்து விடுகிறேன்...
ஆம்.....

உப்பில்லா பண்டம்
சுவைத்தது
அன்று
இன்று?

அடிக்கடி பார்த்து
என் வீட்டு
கண்ணாடியில்
என்னைத்

தேடி கொண்டுவருக்கிறேன்..
என்னை யார் என்று
சொல்லுமா
என்று!

60-வயது நான்
எந்த நினைவுகளும்
ரசித்த தருணங்களும்
எழுத்து வடிவில் கூட,
இல்லாமல்
கரையானால்
கரைந்து கொண்டுவருக்கிறது...

தற்சமயம்
மாதம் மாதம்
“அல்சீமா”
என்ற தலைப்பில்
வெற்றிகளாய்
குவிந்து கொண்டுவருக்கிறது,
மருத்துவமனை
சீட்டு வடிவில்,
வாழ்ந்து கொண்டிருக்கிறேன்
“புது குழந்தைப் போல்”

N. Nivethini.
II – M. Sc Biochemistry

“என்னை நான் அறியாமல்”

காலம்
நினைவுகளையும்
கடத்தி விடுகிறது
ஆம்!!!!

‘அன்று’
நான் கைபிடித்து
நடக்க
கத்துக்கொடுத்த
என்
‘செல்ல பாட்டி’
‘இன்று’
மெல்ல நடக்கிறாள்
‘என் கைபிடித்து’
நான்
யார் என்று
தெரியாமல்!!!!!!!!



என் அம்மா
‘எதையும்
மறப்பதேயில்லை’
தனக்கு இருக்கும்
‘சர்க்கரைநோயை தவிர’

அதுவோ
தன்
மறந்தவரை
மனிப்பதாய்
‘இல்லை’
பழிவாங்கியதன்
விளைவு!!!
“என்னை நான் அறியாமல்”

Nishanthini. N
II – M. Sc Biochemistry

தெருவோரம் வேதனையுடன்

அன்றில்கள் அனைவருக்கும்
அடைகாக்கும் தாயின்
அரவனைக்கும் வணக்கம்
நான் அன்று,
என் குஞ்சுவின் முச்சக்காக
அண்ட ஆகாயத்தையும்
கரம் கொண்டவள்;
என் மழழையின் மகிழ்ச்சிக்காக
என் வீட்டின் முன'னே
காஷ்மீரை உருவாக்கியவள்,
பாசத்திற்காக பணியை விட்டவள்,
அன்பிற்கு அடக்கமானவள்
சில்லரையாய் சிறிக்கும்
என் சிரிப்பிற்காக
பல கட்டுகளை வீசியவள்.
இவை எல்லாம் அன்றொரு நாள் நான்.

ஆனால்
இன்று நான் பல்லாண்டு பிறகு
பாசம் மறந்த பறவைகளின்
பழைய பஞ்சாங்கம்
பழையதை வெளியேற்ற
ஊரினில் போகி உண்டு
அது எங்களுக்கு
உண்டு தான் போலும்,
நாங்கள் பணம் பதவி கேட்டவில்லை
மலழைகளே உங்களின் பாசம் மட்டுமே
எங்களின் சுவாசம்.

இப்படிக்கு

பாசமற்ற பிள்ளைகளால்
கைவிடப்பட்ட பெற்றோர்கள்
தெருவோரம் வேதனையுடன்

----- நன்றி -----

Narmatha. K
I – M. Sc Biochemistry

புது உலகம்

தெருவோரம் நடந்து சென்றேன்
வீதி நாய் கூட ஸ்னேகிதமாய்
வாலாட்டி நடந்தது
பாசமாய் வருடி சென்றது
அந்த தென்றல் கூட
அந்த சூரியனும் என்னைப் பார்த்து
கண் சிமிட்டியது
பறவைகள் என்னைப்பார்த்து
ரிங்காரமிட்டது
அனைத்தையும் விசித்தரமாய் உணர்ந்தேன்
நானோ இது வழக்கம் தான் என்றேன்
என் மனமோ இது புதிதென்றது
என் உலகம் அனைத்தும் மறக்கப்பட்டது
இல்லை மறைக்கப்பட்டது.
வானத்தில் இருந்து
வந்த மழை கூட
என் நிலையை எண்ணித்தானோ!!!!

Kasthuri. G
I- M. Sc Biochemistry

**ALZHEIMER'S DISEASE SPEAKS.....
TO THE HUMANS.....**



Money makes you people forget valuable relations...

Marriage makes a girl forget her parental family...

Entertainment makes people forget time...

Time makes you people forget memories...

Memories make you forget misfortunes...

Misfortunes makes you forget luck...

Luck makes you forget hard work...

But I (ALZHEIMER'S DISEASE) make you forget everything!!!

So people of the earth now tell me

WHAT IS GREAT??????

Money, Marriage, Time, Entertainment, Memories or Me?????

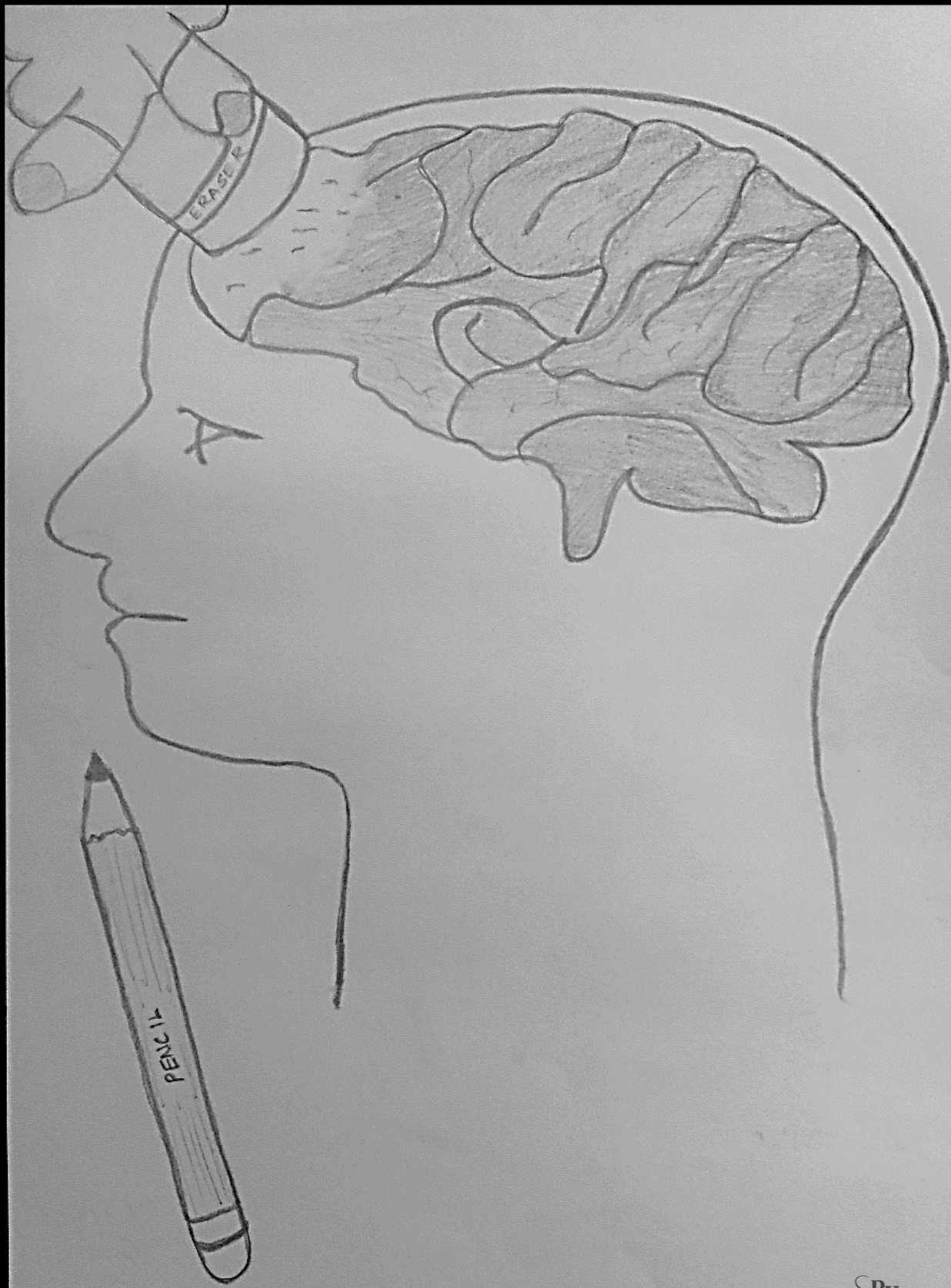
BEAWARE!!!!!

I'M COMING!!!!!



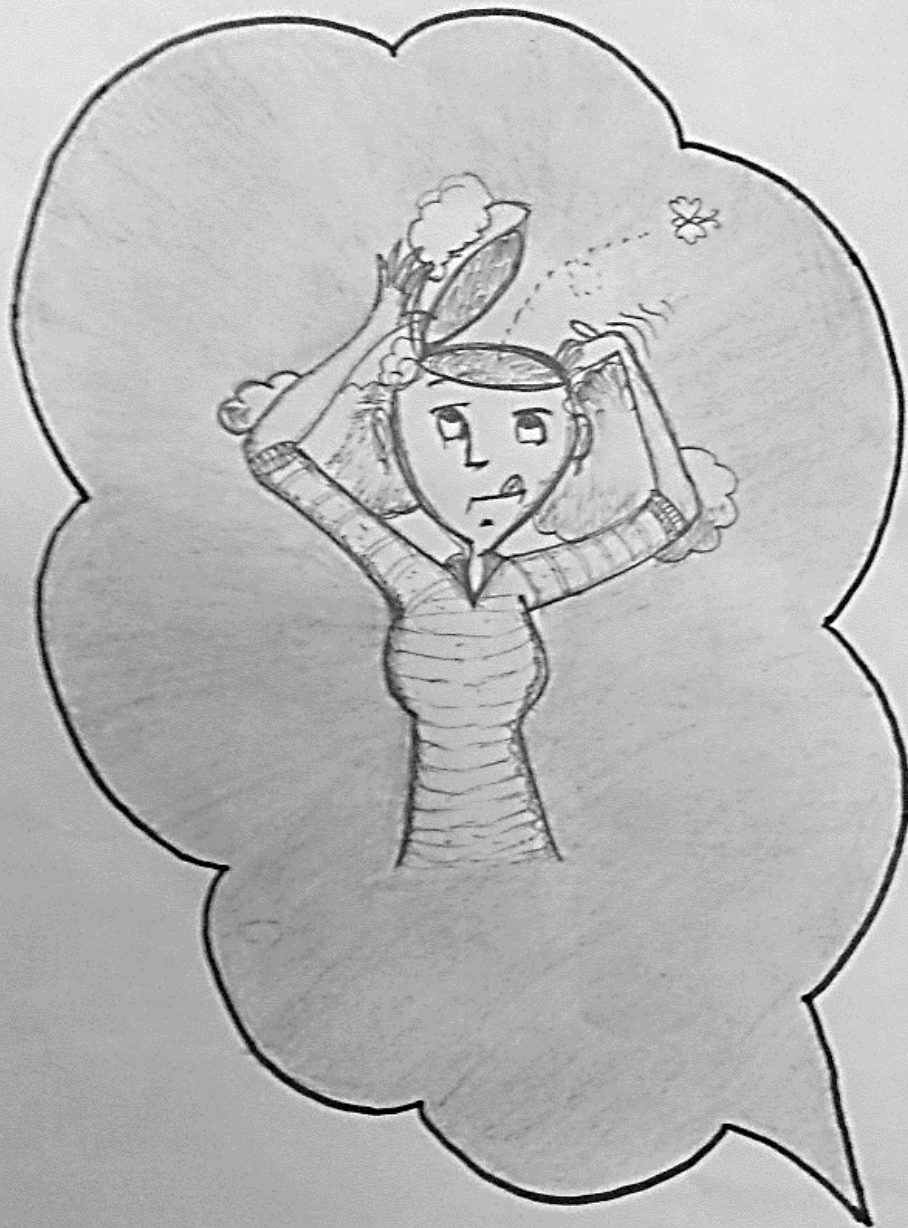
Uma Maheswari

I M. Sc Biochemistry



By

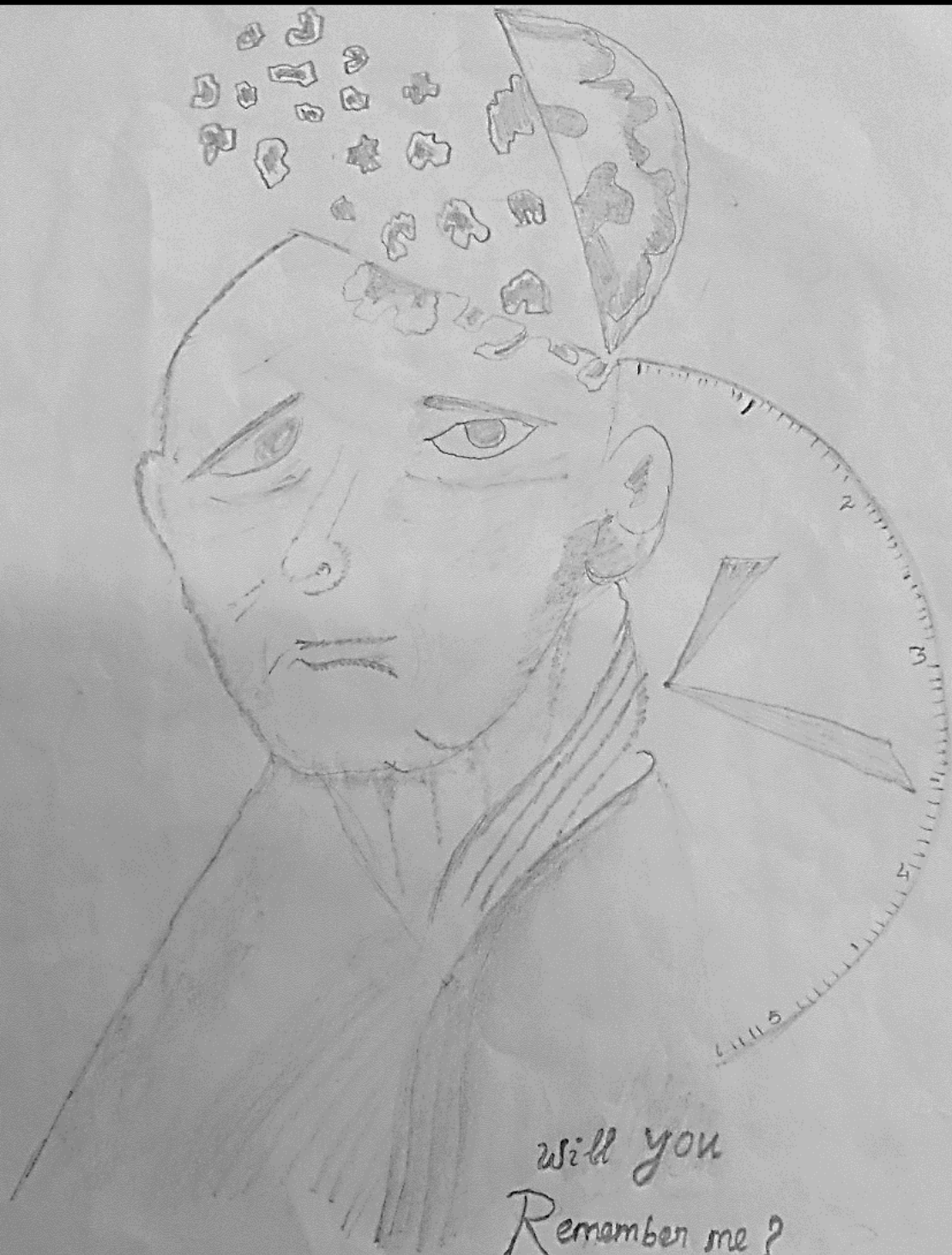
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Research Scholar



BY:

G. KASTHURI

1st MSc Biochemistry.

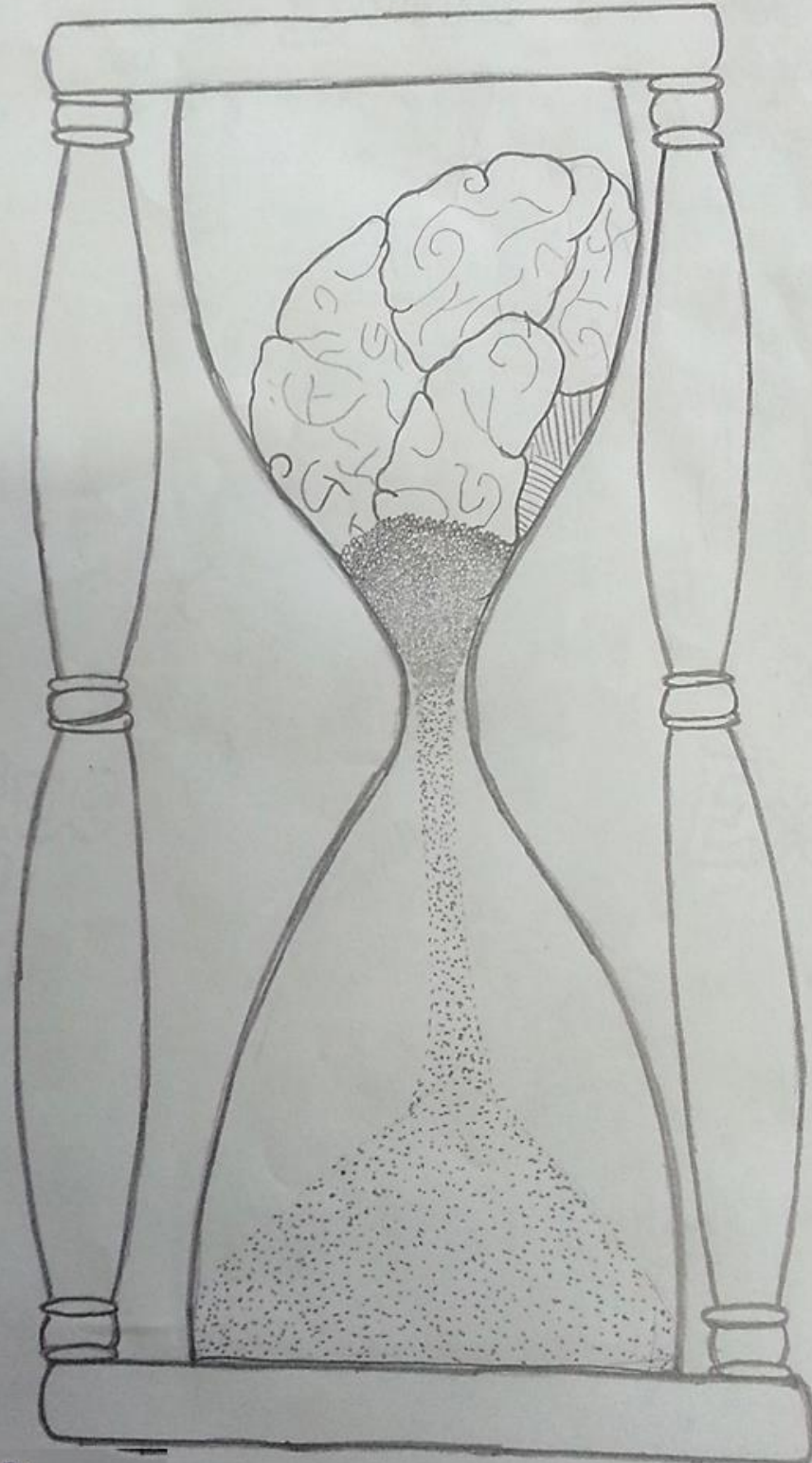


Will you
Remember me?
Some heart touching thoughts about Alzheimer's Disease

A-SARMILA MARY
II - MSc., BIOCHEMIST

ALZHEIMER'S DISEASE

The 5th leading cause of death in adults over 65



R. THANGASUBA,
Vth M.SC LIFE SCIENCES



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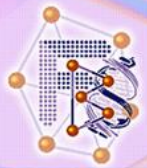
Freezer Model	Power consumption (kWh/day)	Power consumption (Watts)
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HEF U570	8.7	364



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