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EARLY DETECTION OF BRAIN DISEASES THROUGH BLOOD TESTING

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Global population statistics show the number of geriatrics (those over 60 years old) is growing in all parts of the world, except for Africa. The percentage of the elderly in Malaysia rose from 4.6% of the population in 1957 to 5.7% in 1990. The expected expansion is from the current 7% to 15% by the year 2030, when Malaysia will attain 'ageing nation' status. In Bangladesh the median age grew from 19.4 in 1965 to 26.0 this year. Approximately 9.7 million (6.23%) of the population are 65 years and above. The growing number of the aged is a manifestation of the much better health care facilities and services provided by many national governments and the private sector. However, diseases normally linked to old age like Alzheimer's disease (AD) is on the rise. One of the major and perhaps most debilitating condition of the brain relating to AD is dementia. Dementia, literally translated 'loss of the mind', is a general term for a group of disorders in which mental ability and cognitive function become impaired for at least six months. A demented individual is unable to recall past events, recognize faces, speak coherently and care for himself, and is oblivious of the surrounding. Symptoms deteriorate quickly over time and are irreversible. Despite research is being extensively conducted around the world, brain-related diseases remain recalcitrant, hence not easily treated. Thus, the time and cost of care of patients remain overwhelming. Since the first post-mortem investigation conducted by Dr. Alois Alzheimer of Tübingen, Germany at the turn of the last century, the pathology of the brain of AD victim has been quite consistent. One, there appears to be a build-up of abnormal protein, called beta-amyloid, in the surrounding of the neurons in the memory storage and processing areas in the brain. Two, inside the neurons there is collapse of proteins known as *tau*, that are supposed to support the scaffold that keeps the neurons stable and intact, into heaps of cellular muddle and rubbish. These two events appear to be the reasons why affected cells, like the memory neurons fail to do what they normally do. Hence, memory slowly fades away. And so does much of other information, knowledge and even wisdom previously entrenched in the person's brain and mind. Presently available medications are unable to prevent the disease progression but they can provisionally slow down the worsening of symptoms and somewhat improve quality of life of AD patients and, indirectly their caregivers, too. Nowadays worldwide, scientists are putting a lot of effort into AD research to not only discover better ways of treating the disease and delaying its onset, but also to understand how to prevent it from developing in the first place. Although the greatest identified risk factor of AD is increasing age, the development of the disease is not a normal part of the aging process. Early detection would be a tremendous boost to deal with the possibility. These indicators are referred to as biomarkers. Some of these are in the form of genes which have not been previously reported. It is now being accepted that genes which are indicators of a disease may not be similar across world's population. Currently, biomarkers for AD are either identified in the fluid of the brain and spinal cord, or by using imaging techniques. The former technique gives much discomfort to the person being tested, while the latter is normally too expensive or unavailable at most health screening facilities. Early detection is vital

as proper preventive measures against the disease can be put in place. The long standing believe that a disease is a manifestation of nature (genes), and nothing can be done about it seems debatable now. The new paradigm of thinking is that a person may be able to determine his or her own health status by working hard on the nurturing side. This involves living a healthy lifestyle, and striving for a positive physical, mental and spiritual health.

Biography: Abu Bakar Abdul Majeed, a Registered Pharmacist with Malaysia's Board of Pharmacy, has a Bachelor of Pharmacy degree from el-Zagazig University, Egypt (1983), PhD in Neurophysiology from Sheffield University, United Kingdom (1988), and a Master's in Business Administration (MBA) from Universiti Sains Malaysia, Penang (1996). He was awarded the International Brain Research Organisation (IBRO) Post-doctoral Fellowship at the Laboratory for Neural Information Processing, RIKEN in 1992 and Visiting Scientist a year later.



Between 1997 and 2002 ABU BAKAR was Senior Fellow at the Institute of Islamic Understanding Malaysia (IKIM), and also a newspaper columnist of the Saturday edition of the New Straits Times, Malaysia, writing over 100 articles on issues pertaining to Science, Civilisation and Ethics. He was awarded two fellowships in year 2000, the Straniak Fellowship at the Centre for European Integration Studies, Bonn, Germany, and the International Visitors' Program of the U.S. State of Department on 'Religion and Society'.

In 2002 Abu Bakar was appointed Dean of the Faculty of Pharmacy, Universiti Teknologi MARA (UiTM). Between 2009 and 2014 he was Assistant Vice-Chancellor (AVC) for Research, UiTM. Currently, he is a Rector for Universiti Teknologi MARA (UiTM).

Abu Bakar is a council member of the Pharmacy Board, Ministry of Health (2016-2019), and Chairman of the National Bioethics Council, Ministry of Science, Technology and Innovation (2016-2018).

Abu Bakar has written and edited over 20 academic books, and has more than 100 research articles published in respectable journals. His research areas are Alzheimer's disease, nanopharmacy and bioethics.