Method for diagnosis, prognosis and monitoring of Alzheimer disease using metabolomic techniques

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A Spanish biomedical research networking center has developed an innovative in vitro method for diagnosis, prognosis, and monitoring of Alzheimer's disease (AD). Using the metabolic profile in the serum of an individual, they are looking to establish license, research cooperation, or joint venture agreements.

This Spanish research networking center gathers some of the main national research groups in biomedicine, located in more than 100 institutions like universities, hospitals, and technological centers distributed around the country. Alzheimer's disease (AD) is a neurodegenerative disorder and it is the most common cause of dementia. AD is thought to begin 20 years or more before symptoms arise, with changes in the elderly brain that are unnoticeable to the person affected. Only after years of brain damage do individuals experience overt symptoms, and as the disease progresses, the individual is not able to carry out basic daily functions. AD is ultimately fatal. Understanding the mechanisms associated with AD is, therefore, especially important for the identification of diagnostic, and prognostic biomarkers, and therapeutic approaches as well as disease-modifying. Metabolomics is a powerful tool that allows obtaining an accurate biochemical profile of the organism, both in a pathological situation and in a health or control situation. Based on this premise, AD diagnosis and monitoring methods have been described, as well as the risk of suffering from the disease, developed from metabolomic studies of tissues and fluids, such as blood serum, which have allowed the identification of new biomarkers associated with the disease. However, none of these methods has been replicated in different and broad cohorts, so new methods and tools, alternative or improved, based on the analysis of the metabolomic profiles of individuals, must be developed, which allow the early identification of AD and discrimination between this disease and other dementias with high sensitivity and specificity. This would facilitate an early therapeutic intervention necessary to avoid, slow down, or delay the onset of the disease. In this respect, this new in vitro method allows the diagnosis, prognosis, and monitoring of Alzheimer's disease using the metabolic profile in the serum of an individual. The method includes sample preparation and NMR (Nuclear magnetic resonance) acquisition protocol, a mathematical algorithm, and suitable software for data processing. The mathematical model applies not only the biomarkers identified as relevant but the complete metabolomic profile of the sample. The method has both high sensitivity and specificity which are suitable for clinical use. Reproducible data acquisition within the same patient as well as with different individuals is obtained. With this background, the Spanish research center is looking to establish license agreements with the bioindustry, research cooperation with other research organizations to develop innovation projects or joint venture agreements with investors ready to support a spin-off company.

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