

MAPT Gene Expression in Alzheimer's disease

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Abstract— Alzheimer's disease is a multifactorial disorder also it is the most common cause of dementia in the world. Since one of the indicator of Alzheimer's disease is intracellular neurofibrillary groups (composed of filaments of highly phosphorylated Tau) and considering that MAPT gene encoding the protein tau and this protein has been linked to Alzheimer's disease, this study aims at investigating MAPT gene expression in patients with Alzheimer's disease. Our findings show that there is significant relationship between Alzheimer's disease and MAPT gene expression.

Index Terms— Alzheimer's disease, MAPT

I. INTRODUCTION

Alzheimer's disease (AD) is a genetically heterogeneous neurodegenerative disease and Late Onset type (LOAD) is the most common form of dementia affecting people over 65 years old. AD is a complex disease with multifactorial etiology. One of the hallmarks of Alzheimer's disease is intracellular neurofibrillary tangles (composed of highly phosphorylated tau filament Hay) sets the MAPT gene encoding tau protein is the fact that this protein is therefore directly linked to Alzheimer's disease common polymorphism rs242557 (G/A) gene MAPT associated with risk for Alzheimer's disease, therefore formation of NFTs and Alzheimer disease are near interaction with each other [7]-[9].

II. MATERIAL AND METHODS

Alzheimer's patients received the preliminary assessment and after approval of disease by specialist and after obtaining the consent of the family, blood samples were obtained from patients. DNA from each patient was prepared and used for molecular analysis. There are several ways to extract DNA. In this study, considering the quantity and quality of the resulting DNA for PCR and also relatively harmless solution that used in these methods, patient's DNA extracted from saturated salt and chloroform. MAPT gene expression was measured by real time PCR.

III. RESULTS

After PCR, 2% agarose gel was used and the length of the pieces were examined with primers. 30 pieces of DNA in the

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Tetra Arms PCR technique was expected. Figure I confirms that the optimized PCR conditions to all parts without any additional pieces have been reproduced and to confirm, the length of the pieces were compared to NCBI data base. According to our findings the mutant and normal control segments were 340, 228, 167 nucleotides, respectively.

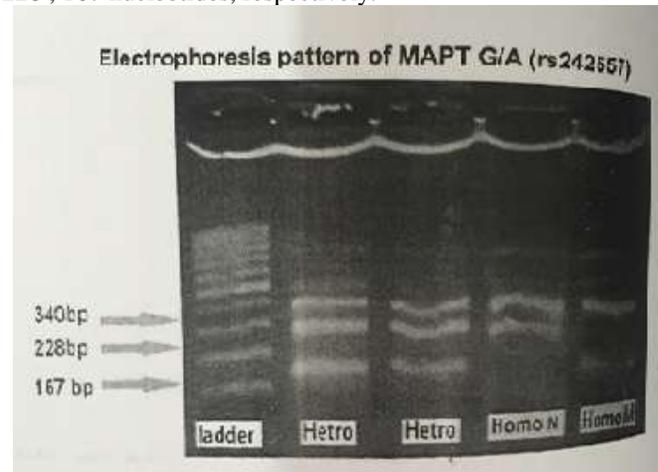


Fig. 1. PCR products related to MAPT gene

IV. DISCUSSION

Alzheimer's disease is the most common cause of dementia in adulthood and old age that associated with deficit in cognitive functions, memory loss, loss of purposeful movements and personality changes. [1], [2] The disease is genetically heterogeneous and influenced by environmental and genetic. Its prevalence of about 3% among people 65 to 50% among 85-year-old healthy change and the disease is located in the list of ten fatal illness in developing countries [6].

Alzheimer's disease with late onset (beginning at the age of 65 years) account for 97% of cases While only 3% of the population, including Alzheimer's Early. Currently it is estimated that there are about 24.3 million people worldwide with dementia and 4.6 million new cases added each year. The number of people with dementia doubled every 20 years and in 2040 it will reach to 81 million [3].

MAPT gene is one of the known genes which is located on chromosome 17 at 21 q 17 and protein encoded by this gene has a vital role in cellular level. The major physiological role of this protein is to promote stability and accumulation of microtubule network this microtubule network is important in the transmission of axons in neurons [4], [5].

As an indicator of Alzheimer's disease are neurofibrillary groups within the cell (composed of filaments of highly phosphorylated Taiwan) and given that MAPT gene encodes a protein of tau so the relationship between Alzheimer's disease and the formation of neurofibrillary groups is undeniable. So (G/A) 242557rs common polymorphism of MAPT gene can be associated with risk of Alzheimer's disease.

V. CONCLUSION

Our findings show that there is significant relationship between Alzheimer's disease and MAPT gene expression.

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