



## Mathematical modeling for genesis of Alzheimer disease through Markov process

Prashant Anthwal<sup>1</sup>, Nupur Goyal<sup>2</sup>, Mangey Ram<sup>2</sup>, Ashish Thapliyal\*<sup>1</sup>

<sup>1</sup>Department of Biotechnology, Graphic Era University, 566/6-Bell Road Clement Town, Dehradun-Uttarakhand, 248002, India.

<sup>2</sup>Department of Mathematics, Graphic Era University, 566/6-Bell Road Clement Town, Dehradun-Uttarakhand, 248002, India

**Abstract** : Current indications show that 46.8 million people are living with dementia worldwide and these numbers are increasing every year. In 2015 alone, 9.9 million new cases were reported worldwide and its cost was around 818 US\$. The most prominent form of dementia is Alzheimer's disease (AD). Efforts to develop a drug for AD have been ongoing and several efforts have failed in different phases of trial. We used mathematical model of Markov to test the possibility that genesis of AD might occur not in brain but at other locations but the final event of development of plaques and neuronal death occurs in brain. Our model takes into account various possibilities that might leads to the development of AD. It suggests that during the genesis of AD, it is least likely that direct events are contributed by brain itself. Initial contributions are most likely made by some factor that is transported via blood to brain.

**Keywords:** Amyloid beta, pathogenesis, plaques, dementia, Markov process.

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