

THE PROTECTIVE EFFECTS OF DIETARY POLYPHENOLS ON ALZHEIMER'S DISEASE

Ünkan Urganci¹, Fatma Isik¹

1: Pamukkale University, Faculty of Engineering, Department of Food Engineering,
Denizli/Turkey

unkanurganci@gmail.com

ABSTRACT

Alzheimer's disease (AD) is a progressive irreversible neurodegenerative disease in the hippocampus and cortex regions of the brain and is the most common cause of dementia in the elderly population. Although it is known that there are 40 million cases worldwide today, it is thought that this number will exceed up to 100 million by 2050. The disease is characterized by symptoms of memory loss, difficulty in speaking, decision making, learning, problem solving, and impaired perception of time and orientation. In its pathogenesis, the accumulation of amyloid beta (A β) senile plaques in the extracellular synaptic spaces of the neurocortex, especially in the temporal and parietal lobes of the brain, the formation of intracellular hyperphosphorylated tau protein deposition and neurofibrillary tangles (NFY) are important and triggered neurodegeneration mainly affects cognitive behavior and memory.

The most accepted hypothesis in recent years and supported by various studies is the "amyloid hypothesis". It is accepted that this hypothesis is triggered by A β peptides resulting from cleavage of APP by β -secretase, and the toxicity of these peptides plays an important role in disease progression.

Phenolic compounds are organic compounds containing a benzene ring to which one or more hydroxyl groups are attached. It has been reported in the literature that polyphenols are highly effective on cognitive functions. Studies have shown that regular consumption of polyphenols reduces the risk of developing neurodegenerative diseases. Studies have reported that polyphenols inhibit A β production and accumulation processes by interacting with different forms of amyloid structure. Various studies have proven that numerous polyphenols such as epigallocatechin 3-gallate, punicalagin, curcumin, resveratrol, rutin, quercetin, caffeic acid, tannic acid, ferulic acid, rosmarinic acid, ellagic acid etc. prevented or decelerated AD progression with different mechanisms. In this study, polyphenols and their therapeutic properties against AD will be discussed extensively.

Keywords: Alzheimer's Disease, Amyloid Beta, Neurodegeneration, Polyphenols, Antioxidants