Evaluation of antioxidant and Inhibitory properties of Yarrow extract (Achillea millefolium) on the acetylcholine esterase activity and the production of BSA Amyloid Nano–biofibrils as a model protein

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Introduction: Achillea millefolium L. is one of the most commonly used medicinal herbs that has a special place in traditional medicine and modern medicine. Achillea millefolium L. is also used today in the pharmaceutical and food industries. In the present study, the anti-Alzheimer's effects were studied by inhibiting the production of amyloid nanobiofibrils and the antioxidant properties of this unique plant. Materials and Methods: Extract of this plant was done by hydro-alcoholic and maceration methods, The amount of the compounds in the extract was determined by GC-MS , Inhibition of free radicals to determine antioxidant property by DPPH method and inhibition of acetyl cholinesterase and inhibition of production of amyloid fibers were determined by visible spectroscopy. Results: According to the results of GC-MS, most of the constituents in Achillea millefolium L. extract were reported as Achillicin, Camphor, Azulen and Eucalyptol. According to the results of the antioxidant test, the lowest inhibition of free radicals in 1 mg / ml of Achillea millefolium L. was 54.47% and the highest inhibition of free radicals in 6 mg / ml Achillea millefolium L. was 95.80%. The results of acetylcholinesterase inhibition showed that the highest amount of enzyme inhibition occurred in sample number 2 containing 1000 ml of extract which was 68.28%. The dose of 0.8 mg / ml of Achillea millefolium L. extract has the most inhibitory effect on the production of amyloid fibers. Conclusion: The results showed that the extract of Achillea millefolium L. has antioxidant properties, inhibition of acetylcholinesterase enzyme by increasing the concentration of extract and the effects of inhibition of amyloid filaments production at specified doses.

Keywords : Achillea millefolium L., Antioxidant, Acetylcholinesterase, Amyloid Nano-biofibrils, Anti-Alzheimer's effect