

Protective Effect of Medicinal Plants on Neuron Degeneration Diseases and Controversial Predictive Diagnosis

Mahmoud M Elalfy^{1*}, Naglaa M Maher¹, Fathy R Sleem¹ and Mona G El-hadidy²

¹Department of Forensic Medicine and Toxicology, Mansoura University, Egypt

²Department of Medical Physiology, Mansoura University, Egypt

*Corresponding author: Mahmoud M Elalfy, Forensic Medicine and Toxicology, Faculty of Veterinary Medicine, Mansoura University, Egypt.

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Abstract

Neuron degenerations resulted from chronic exposure of chemicals, environmental pollutions, drugs and pesticides. Many diseases of neuron degenerations prediction still so difficult as it occurs in advanced age in animal or human and even advanced technology and recent trial of biomarkers for diagnosis of neuron degenerations still controversial. Protective herbal plants help in prevention of neuron degeneration diseases or delay its occurrence through antioxidant mechanisms. Recently, tau and tubulin protein expression could explore the future occurrence of neurogenerative diseases in human.

Keywords: Neuron Degeneration, Biomarkers, Albino Rats

Introduction

Neuron degenerative diseases are more common in developed and developing countries and occur all over the world due to death

of neurons [1-3]. The incidence of neuro-degenerative diseases expected to increase nearly 131.5 million in 2050 [1,2].

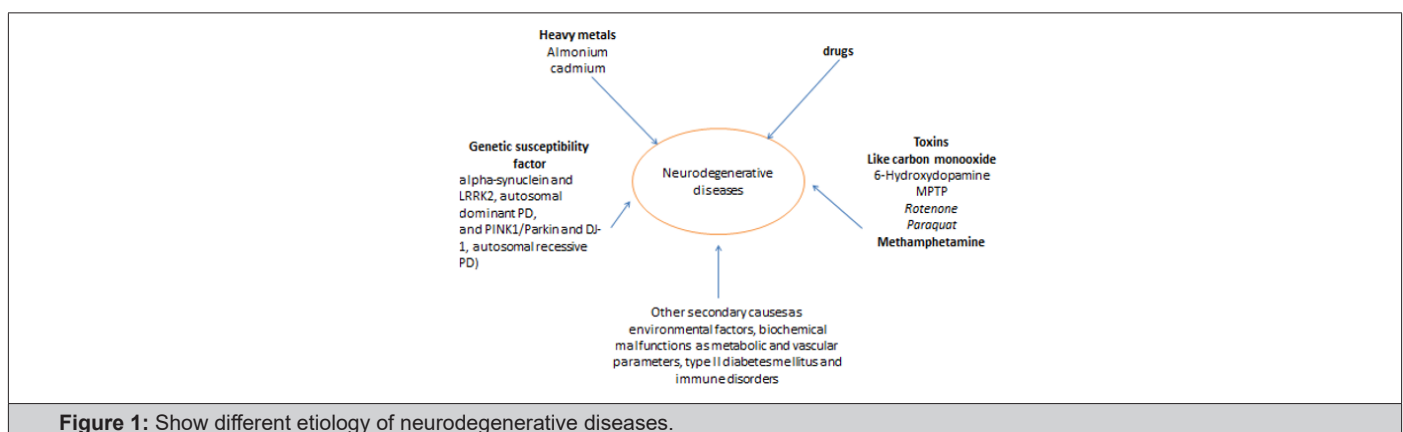


Figure 1: Show different etiology of neurodegenerative diseases.

The etiological causes of neuron degenerative diseases were varied from heavy metals exposure like ammonium [4] drugs [5] or genetic susceptibility [6] and toxic agent like carbon monoxide [3]. Also, the scientist is investigating different possible causes of secondary neuron degeneration resulting from environmental factors, biochemical malfunctions as metabolic and vascular parameters, type II diabetes mellitus and immune disorders [7] (Figure 1).

The mechanism of neuron degeneration still obscure even there is one accepted theory about neurotoxicity of Acetylcholinesterase that may play a role in the development of neuronal degeneration observed in Alzheimer's disease [8] and evidence by potential role of cholinesterase inhibitor (ChI) in improvement of cognitive function and decrease the risk of falls in patients with parkinsonism [9].

The incidence of neurodegenerative disease varied between individuals and there is no predictive measurable parameter except some trail about serum biomarkers like tau protein [10]. Also, integrins are play important role pathophysiology of many brain diseases, such as epilepsy, and consider a potential target for the discovery of new drugs for neurological disorders [11,12] different

biomarkers are currently being studied in Alzheimer disease and other neurodegeneration diseases such as cerebrospinal fluid (CSF) A β , tau, phosphorylated tau and the other neuronal proteins, PET tracers for A β , tau and glucose uptake, and MR measures of brain diseases [13-15]. Interestingly, phenylalanine hydroxylase could also be a biomarker of neurodegenerative disease [16] (Figure 2).

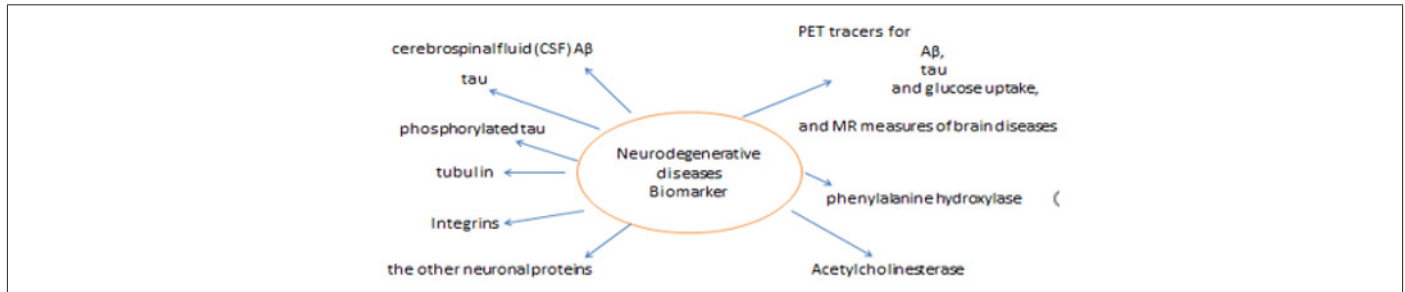


Figure 2: Show biomarker for prediction of neurodegenerative diseases.

The only promising in prevention and delay neurodegenerative diseases are many herbal plants that have been studied like *Nigella sativa* (Khazdair, 2015), *moringa olifera* [17] and many Plants-derived natural products used in the treatment of neurological diseases [18]. The ethanol extract of *Alchemilla vulgaris* and *Filipendula ulmaria* were used as acetylcholinesterase and tyrosinase inhibitor for treatment of neurodegenerative

diseases in human [19]. Notably, there many medicinal plants have neuroprotective effects studied before like *Ashwagandha*, *Baccopa monnieri*, *Centella asiatica*, *Ginseng*, *Ginkgo biloba*, and active principals that extracted from plants as celastrol, curcumin, flavonoids, lycopene, resveratrol, sesamol, and trehalose characterized by antioxidant and antiapoptotic neuroprotection effects [20] (Figure 3).

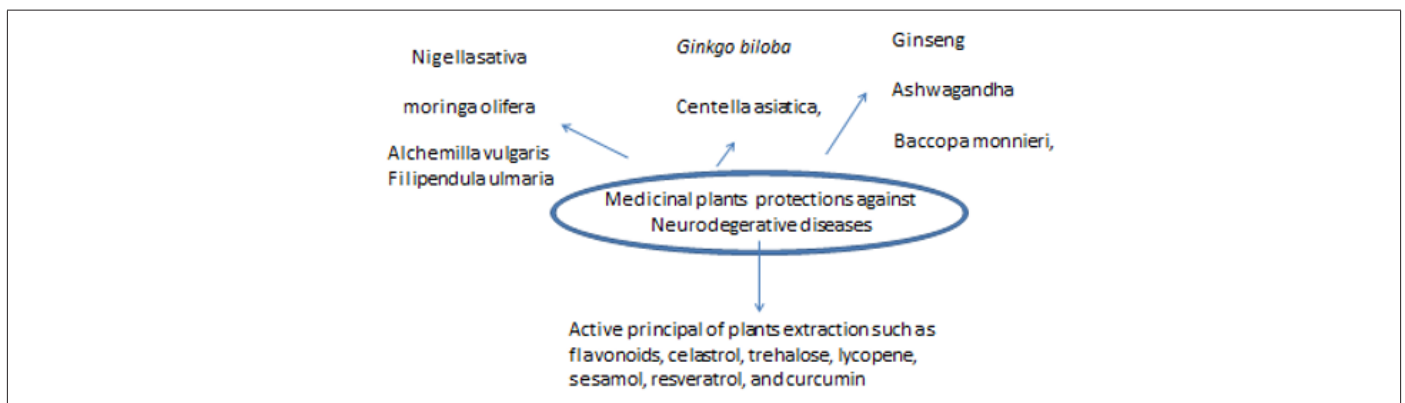


Figure 3: Show biomarker for prediction of neurodegenerative diseases.

Medicinal plants used in traditional medicine along with their extracted phytochemicals have various neuro-pharmacological pathways as modulation of transcription, transduction and intracellular signaling pathways including ERK and p38, with up regulation of anti-inflammatory cascades, anti-apoptosis and anti-oxidative stress associated pathways, all of them have essential role in the preventive and protection effects of the plants in neurodegenerative diseases [21,22].

Future Highlights

The causes of neurodegenerative diseases remain controversial. The use of plants medicine has enhanced a lot of interest for their therapeutic potential effects for many decades. In future, the benefit of phytochemicals on neurodegenerative diseases treatments due to their anti-apoptotic, anti-inflammatory, anti-oxidative and anti-cholinesterase activities. The rational of this review to investigate complex of predictive diagnosis of neurodegenerative diseases and possible protective agents as medicinal plants.

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