

Editorial**Smoking Tobacco Reduces the Risk of Parkinson Disease**

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Parkinson disease (PD) is a progressive neurodegenerative disorder characterized by clinical symptoms of bradykinesia, resting tremor, and muscular rigidity. Nonmotor symptoms of PD including olfactory dysfunction, constipation, disordered sleep, and disordered mood, may precede the onset of motor symptoms within about a decade. The pathology includes the accumulation of Lewy bodies and the loss of dopaminergic neurons in the substantia nigra region of the basal ganglia. The etiology of PD remains poorly understood, but the modifiable risk factors have been reported in association with respect to smoking, in particular, that it might be neuroprotective and thus beneficial in individuals with early Parkinson's disease.¹

Many epidemiological studies found that tobacco smokers had lower incidence of Parkinson's disease when compared to normal population. A long-term follow-up research in British physician also confirmed the inverse relationship of smoking and death from Parkinson's disease. However, the smoking rate in male physician had been declining for the past several decades.²

Neuroscientists have long been known about the addictive effect of nicotine. The main natural source is from tobacco. Nicotine is the major cause of tobacco addiction. Tobacco causes enormous impact in societal loss. Nevertheless, other constituents in tobacco also play important part in tobacco-related illnesses. Nicotine exerts its effect by binding with nicotinic acetylcholine receptors (nAChRs), a ligand-gated ion channel

which is widely distributed in the brain. After binding, positive ion channel at cell membrane will open, resulting in many cascading biological effects. One of them is an addiction pathway which is related to acetylcholine stimulation leading to dopamine release. The effect of dopamine stimulation, especially at ventral tegmental area, are mood elevation, alertness and happiness. The abnormalities of nAChRs are found in many neurodegenerative disease causing dysregulation of dopamine synthesis or release. Nicotine may play a role in their treatment, prevent future complication and cellular degeneration.^{3,4}

On the other hand, smoking cigarette comes along with hazardous related diseases. Absolutely stopping smoking remains mandatory, but impossible to achieve. Fortunately, the invention of electronic cigarettes would help deterring smokers from using the conventional cigarettes in order to escape the pathogenicity risk of tar from burning tobacco and limiting the amount of nicotine concentration in the vapor or aerosol mist.⁵ Furthermore, the prevalence of smoking cigarette in Thailand has evidently declined over the past fifty years, especially, by an effort of a devoted scholar physician, Professor Dr. Prakrit Vathesatogkit. Therefore, electronic cigarettes may not only help stop smoking, but also patients, who are at high risk of PD, in case of taking nicotine without smoking. However, e-cigarette, or vaping product-use associated lung injury and long-term consequence should also be considered.⁶

Volume 2023, Issue 1, Page 7-8

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Last but not least, the trace of nicotine in the inhaled vapor remains necessary due to its addictive power. Nevertheless, using any electronic cigarettes without tracing nicotine would never help stop smoking at all. This also means that taking nicotine must be careful and should be for someone who might gain benefit from it, like those patients.

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