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Memory, anxiety and alcohol use: Connections and disconnections of *Nigella Sativa* Oil (NSO) in alcohol induced effects in male Wistar rats

Beenish Asrar¹, Judith Homberg², Darakhshan J Haleem³ and Ikram Ullah Khan³

¹International Islamic University, Pakistan

²Karachi University, Pakistan

³Radboud University, Netherlands

Statement of the Problem: There are many factors that can prevent or promote one's chances for the development of diseases. One example is alcohol use. Alcohol consumption remains part of our social milieu. Harmful alcohol use is a significant public health problem that often begins early in adult life. Globally, an estimated 2 billion people drink alcohol and 76 million have Alcohol Use Disorder (AUD). Amongst a range of organ damage outcomes, chronic alcohol abuse and particularly binge-type alcoholism causes neuropathological sequela leading to brain dysfunction and dementia. Due to this, alcohol is known to have effects on memory and other cognitive functions in humans and animals. Anxiety disorders frequently co-occur with Alcohol-Use Disorder (AUD), with 75% of individuals that abuse alcohol having a current or previous diagnosis of an anxiety disorder. *Nigella Sativa* Oil (NSO) plant seeds are called black cumin or black seeds. *Nigella Sativa* Oil (NSO) has several physiological and pharmacological properties that can improve the behavior and systems. As the attractive dietary approaches towards disease prevention involve inexpensive and low risk substances, one of the purpose of this study is to explore the ability of dietary supplementation of black cumin oil to prevent alcohol induced detrimental behavior like anxiety and memory impairment.

Method: Male Wistar rats (n=6) were divided into 2 groups control and alcohol. Controls were given water and oils whereas the alcohol group was given alcohol in the drinking bottles for 28 days. Animals weighted daily and behavioral measurements (weekly) and sacrificed. Brain and blood were collected and immediately frozen for molecular markers associated with behavior like dementia.

Findings: Alcohol showed significant reduction in weight, weaken memory and anxiety level compared to water drinking animals. NSO treatment improved behavior in alcohol drinking animals by enhancing the memory and reducing the anxiety but in water drinking animals NSO improved the memory only. Effects of NSO treatment on weight were not significant in both the groups.

Conclusion: *Nigella Sativa* Oil is capable to enhance memory. It can significantly ameliorate the anxiety caused by chronic alcohol consumption.

beenish.asrar@radboudumc.nl

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