**Name of Journal:** *World Journal of Psychiatry*

**Manuscript NO:** 73902

**Manuscript Type:** LETTER TO THE EDITOR

**Biological mechanisms and possible primary prevention of depression**

Kuo CY *et al*. Diet and depression

Chih-Yun Kuo, Ivo Stachiv

**Chih-Yun Kuo,** Department of Neurology and Centre of Clinical Neuroscience, First Faculty of Medicine, Charles University, Prague 12108, Czech Republic

**Ivo Stachiv,** Department of Functional Materials, Institute of Physics, Czech Academy of Sciences, Praha 18021, Czech Republic

**Author contributions:** Both authors have prepared the manuscript, and contributed equally to this work.

**Corresponding author: Ivo Stachiv, PhD, Academic Fellow, Associate Professor,** Department of Functional Materials, Institute of Physics, Czech Academy of Sciences, Na Slovance 2, Praha 18021, Czech Republic. stachiv@fzu.cz

**Received:** December 7, 2021

**Revised:** March 15, 2022

**Accepted:** April 26, 2022

**Published online:** May 19, 2022

**Abstract**

Individuals with unipolar depressive disorder (UDD) are having an increased risk of death and development of dementia in later life. It is widely expected that in a near future UDD would be the leading cause of death; therefore, a primary inexpensive prevention of UDD will be of a great importance to the society. Several studies provide evidences supporting the positive effect of Mediterranean diet on a reduced risk for development of depression.

**Key Words:** Unipolar depressive disorder; Mediterranean diet; Depression; Primary prevention; Dementia

**©The** **Author(s) 2022.** Published by Baishideng Publishing Group Inc. All rights reserved.

**Citation:** Kuo CY, Stachiv I. Biological mechanisms and possible primary prevention of depression. *World J Psychiatry* 2022; 12(5): 770-772

**URL:** <https://www.wjgnet.com/2220-3206/full/v12/i5/770.htm>

**DOI:** https://dx.doi.org/10.5498/wjp.v12.i5.770

**Core Tip:** Dietary interventions, especially Mediterranean diet, may help to reduce the risk for development of depression. It is the high levels of various antioxidant compounds, adequate B-group vitamin and folate content which make the Mediterranean diet a possible candidate for an inexpensive primary intervention of depression. However, the long-term clinical trials on the large cohorts are still necessary to understand the relationship between dietary pattern and development of depression or dementia.

**TO THE EDITOR**

Unipolar depressive disorder (UDD) is characterized by an increased mortality in the general population. The healthy diet, especially Mediterranean diet, has been found being associated with the one`s health status including mental health. Unfortunately, up to date the exact relationship between the healthy diet and the risk for development of depression, biomarkers and overall improvements in the one`s quality of life is still not fully understood. With this in mind we read the narrative review by Pano *et al*[1] with a considerable interest. In their study, they have summarized the available evidences on the biological mechanisms of UDD and cardiometabolic diseases as well as the primary preventive strategies for depression such as dietary interventions. They have suggested that Mediterranean diet interventions could potentially be considered as an inexpensive strategy enabling to notably reduce the risk for depression, that is, Mediterranean diet can be viewed as the protective factor against depression. In addition, authors have also pointed out main advantages of this healthy diet (*i.e.*, Mediterranean diet) such as the high levels of various antioxidant compounds, adequate B-group vitamin and folate content.

We commend the authors for this important research and agree with their opinion and conclusions. Note that their data which are in a good agreement with other recently reported studies on association between dietary patterns and depression[2-4] or even dietary pattern and dementia in later life[5], are of great importance to public health. These recent studies provide evidences suggesting that oxidative stress, gut microbiota, the hypothalamic-pituitary-adrenal dysregulation and mitochondrial dysfunction are the possible driving mechanisms of depression. Despite the mechanisms associating the dietary interventions with depression are still not fully explained, there is a consensus among researchers that healthy diet, that is, particularly Mediterranean diet, can notably reduce the incidence of depression. In addition, Mediterranean diet has also been shown affecting depression *via* other chronical comorbid diseases such as diabetes mellitus or cardiovascular diseases. Pano *et al*[1] have also proposed that the systematic long-term clinical trials would be necessary to support the protective effect of dietary interventions. We foresee that these studies should also account for behavioral, biological and other factors such as sex and culture differences. Hence, the effect of other healthy diet and individual factors would be required to develop novel treatment strategies and clinical practice guidelines.

To conclude, we once again commend the authors on this interesting work and highly welcome their findings on this important topic. We emphasize here that research associating healthy lifestyle and depression should be of emergent importance, and a larger sample size and well-designed clinical trials are needed in the future studies.

**REFERENCES**

1 **Pano O**, Martínez-Lapiscina EH, Sayón-Orea C, Martinez-Gonzalez MA, Martinez JA, Sanchez-Villegas A. Healthy diet, depression and quality of life: A narrative review of biological mechanisms and primary prevention opportunities. *World J Psychiatry* 2021; **11**: 997-1016 [PMID: 34888169 DOI: 10.5498/wjp.v11.i11.997]

2 **Lassale C**, Batty GD, Baghdadli A, Jacka F, Sánchez-Villegas A, Kivimäki M, Akbaraly T. Healthy dietary indices and risk of depressive outcomes: a systematic review and meta-analysis of observational studies. *Mol Psychiatry* 2019; **24**: 965-986 [PMID: 30254236 DOI: 10.1038/s41380-018-0237-8]

3 **Molendijk M**, Molero P, Ortuño Sánchez-Pedreño F, Van der Does W, Angel Martínez-González M. Diet quality and depression risk: A systematic review and dose-response meta-analysis of prospective studies. *J Affect Disord* 2018; **226**: 346-354 [PMID: 29031185 DOI: 10.1016/j.jad.2017.09.022]

4 **Marx W**, Lane M, Hockey M, Aslam H, Berk M, Walder K, Borsini A, Firth J, Pariante CM, Berding K, Cryan JF, Clarke G, Craig JM, Su KP, Mischoulon D, Gomez-Pinilla F, Foster JA, Cani PD, Thuret S, Staudacher HM, Sánchez-Villegas A, Arshad H, Akbaraly T, O'Neil A, Segasby T, Jacka FN. Diet and depression: exploring the biological mechanisms of action. *Mol Psychiatry* 2021; **26**: 134-150 [PMID: 33144709 DOI: 10.1038/s41380-020-00925-x]

5 **Kuo CY**, Stachiv I, Nikolai T. Association of Late Life Depression, (Non-) Modifiable Risk and Protective Factors with Dementia and Alzheimer's Disease: Literature Review on Current Evidences, Preventive Interventions and Possible Future Trends in Prevention and Treatment of Dementia. *Int J Environ Res Public Health* 2020; **17** [PMID: 33066592 DOI: 10.3390/ijerph17207475]

**Footnotes**

**Conflict-of-interest statement:** All authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: https://creativecommons.org/Licenses/by-nc/4.0/

**Provenance and peer review:** Invited article; Externally peer reviewed.

**Peer-review model:** Single blind

**Peer-review started:** December 7, 2021

**First decision:** March 13, 2022

**Article in press:** April 26, 2022

**Specialty type:** Psychiatry

**Country/Territory of origin:** Czech Republic

**Peer-review report’s scientific quality classification**

Grade A (Excellent): 0

Grade B (Very good): B, B

Grade C (Good): 0

Grade D (Fair): 0

Grade E (Poor): 0

**P-Reviewer:** Aguilar-Latorre A, Spain; Chen JK, China **S-Editor:** Ma YJ **L-Editor:** A **P-Editor:** Ma YJ



Published by **Baishideng Publishing Group Inc**

7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

**Telephone:** +1-925-3991568

**E-mail:** bpgoffice@wjgnet.com

**Help Desk:** https://www.f6publishing.com/helpdesk

https://www.wjgnet.com



**© 2022 Baishideng Publishing Group Inc. All rights reserved.**