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Milk kefir drink may not reduce depression in patients with non-alcoholic fatty liver disease: secondary outcome analysis of a randomized, single-blinded, controlled clinical trial

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Abstract

Background Depression is prevalent among individuals with non-alcoholic fatty liver disease (NAFLD) and can cause poor health outcomes. Moreover, a solid bilateral association between NAFLD and depression has been shown, which may alleviate by kefir consumption. Thus, we aimed to investigate the effect of milk kefir drinks on the depression status of individuals with NAFLD.

Methods In a secondary outcome analysis of a randomized, single-blinded, controlled clinical trial, 80 adults with grades 1 to 3 of NAFLD were included in an 8-week intervention. Participants were randomly assigned to Diet or Diet + kefir groups to either follow a low-calorie diet or a low-calorie diet along with a 500 cc milk kefir drink daily. The participants' demographic, anthropometric, dietary, and physical data were recorded before and after the study. Depression status was assessed using the Persian format of the second version of the Beck Depression Inventory (BDI-II-Persian) at the baseline and after 8 weeks of intervention.

Results Overall, 80 participants aged 42.87 ± 10.67 years were included in the analysis. The data on the baseline demographic, dietary, and physical activity of the groups were not significantly different. During the study, participants in Diet + Kefir group had a significantly decreased energy (P = 0.02), carbohydrate (P = 0.4), and fat consumption (P = 0.4). However, during the study, the depression score was not significantly reduced in the Diet group, the Diet + Kefir group showed a significant reduction in depression (P = 0.02). However, between-group analyses for changes in depression were not significant (P = 0.59).

Conclusion Consumption of milk kefir drink for 8 weeks may not reduce depression symptoms in adults with NAFLD.

Trial registration The trial was registered at IRCT.ir as IRCT20170916036204N6 (August 2018).

Keywords Non-alcoholic fatty liver disease, Depression, Depressive disorder, Milk, Kefir

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investigations are suggested with adequate sample size, considering different abnormalities in populations, and assessment of gut microbiota population in participants.

Conclusion

Milk kefir drink consumption for 8 weeks may not reduce depression symptoms in NAFLD patients. Further randomized controlled clinical trials with longer durations and sufficient sample size are suggested to clarify the possible effect.

Abbreviations

ALT	Alanine transaminase
ANCOVA	Analysis of covariance
AST	Aspartate transaminase
BDI-II-Persian	Beck Depression Inventory-II-Persian
BMI	Body mass index
CRP	C-reactive protein
DASH	Dietary Approaches to Stop Hypertension
GABA	Gamma aminobutyricacid
HPA	Hypothalamic-pituitary-adrenal
IFN-γ	Interferon gamma
IL-2	Interleukin 2
IL-6	Interleukin 6
IPAQ	International Physical Activity Questionnaire
IRCT	Iranian Registry of Clinical Trials
IU	International unit
MIND	the Mediterranean-DASH Intervention for Neurodegenerative Delay
NAFLD	Non-alcoholic fatty liver disease
NF-kB	Nuclear factor kappa B
SD	Standard deviation
SUMS	Shiraz University of Medical Sciences
T2DM	Type 2 Diabetes Mellitus
TNF-α	Tumor necrosis factor alpha

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Authors' contributions

NH, NR, and MAM conceived the study. NR and FM conducted the study. MAM and FM conducted statistical analysis. MAM and MHE provided the first draft. MAM, FM, and NH revised the manuscript. All authors have read and approved the final manuscript.

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Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request. To access the dataset, please contact Dr. Najmeh Hejazi via email (najmehhejazi@gmail.com).

Declarations

Ethics approval and consent to participate

The study was done in accordance with the Helsinki Declarations of ethics and approved by the Ethics committee of Shiraz University of Medical Sciences (SUMS), Shiraz, Iran (Code: IR.SUMS.REC.1397.107). Participants were informed about the study prior to participation. Informed consent was obtained from all subjects.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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