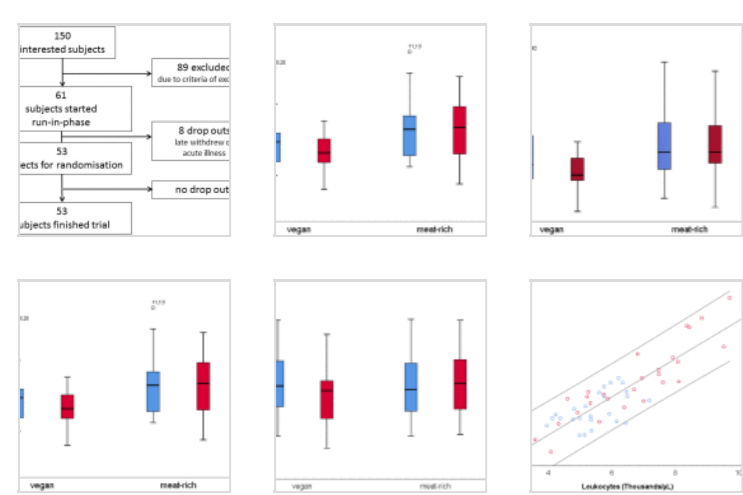


[Get Access](#)[Share](#)[Export](#)[Advanced](#)[Access through your institution >](#)[to view subscribed content from home](#)

Outline

[Summary](#)[Keywords](#)[1. Introduction](#)[2. Materials and methods](#)[3. Results](#)[4. Discussion](#)[Funding](#)[Author contributions statement](#)[Conflict of Interest](#)[Acknowledgement](#)[Abbreviations](#)[Appendix A. Supplementary data](#)[References](#)[Show full outline >](#)

Figures (8)

[Show all figures >](#)

Tables (4)

- [Table 1](#)
- [Table 2](#)
- [Table 3](#)
- [Table 4](#)

Extras (3)

- [Multimedia component 1](#)
- [Multimedia component 2](#)
- [Multimedia component 3](#)



Clinical Nutrition

Available online 24 February 2020

In Press, Corrected Proof



Randomized Control Trials

Vegan diet reduces neutrophils, monocytes and platelets related to branched-chain amino acids – A randomized, controlled trial

Ann-Kathrin Lederer ^{a, *}, Andrea Maul-Pavicic ^{b, c}, Luciana Hannibal ^d, Manuel Hettich ^a, Carmen Steinborn ^a, Carsten Gründemann ^f, Amy Marisa Zimmermann-Klemd ^a, Alexander Müller ^a, Bettina Sehnert ^{b, c}, Ulrich Salzer ^{b, c}, Reinhild Klein ^e, Reinhard E. Voll ^{b, c}, Yvonne Samstag ^g, Roman Huber ^a

[Show more >](#)<https://doi.org/10.1016/j.clnu.2020.02.011>[Get rights and content](#)

Summary

Background

Vegan diet (VD) has improved inflammatory activity in patients with rheumatoid arthritis (RA) in several small controlled trials. The underlying mechanism remains widely unclear. We investigated the effect of a VD in comparison to a meat-rich diet (MD) on markers of inflammation (which have been shown to be relevant in patients with RA) in healthy volunteers.

Methods

53 healthy, omnivore subjects were randomized to a controlled VD (n = 26) or MD (n = 27) for 4 weeks following a pre-treatment phase of a one week controlled mixed diet. Primary parameters of interest were sialylation of immunoglobulins, percentage of regulatory T-cells and level of interleukin 10 (IL10). Usual care immune parameters used in patients with RA and amino acid serum levels as well as granulocytes and monocytes colony stimulating factor (GM-CSF) serum levels were secondary parameters.

Results

In the VD group, total leukocyte, neutrophil, monocyte and platelet counts decreased and after four weeks they were significantly lower compared to the MD group (ANCOVA: leukocytes p = 0.003, neutrophils p = 0.001, monocytes p = 0.032, platelets p = 0.004). Leukocytes, neutrophils, monocytes, and platelets correlated with each other and likewise conform with serum levels of branched-chain amino acids, which were significantly lower in the VD compared to the MD group. The primary parameters did not differ between the groups and BMI remained stable in the two groups.

Conclusion

Four weeks of a controlled VD affected the number of neutrophils, monocytes and platelets but not the number or function of lymphocytes. The relation with branched-chain amino acids and GM-CSF suggests a mode of action via the mTOR signaling pathway.

Registered at

<http://www.drks.de> (German Clinical Trial register) at DRKS00011963.

Keywords

Nutrition; Inflammation; Rheumatoid arthritis; Leukocytes; Granulocytes; Lymphocytes; Immunoglobulin glycosylation; mTOR; GM-CSF

[View full text](#)

© 2020 Elsevier Ltd and European Society for Clinical Nutrition and Metabolism. All rights reserved.

Recommended articles

[An association between glycine and insulin resistance](#)
Clinical Nutrition, 2020

[Purchase PDF](#)[View details >](#)

[The Mediterranean diet decreases proinflammatory cytokines](#)
Clinical Nutrition, 2020

[Purchase PDF](#)[View details >](#)

[Yes, vitamin D can be a magic bullet](#)
Clinical Nutrition, Volume 39, Issue 5, 2020, p...

[Purchase PDF](#)[View details >](#)

1 2 Next >

Citing articles (1)

Article Metrics

Citations

Citation Indexes: 1

Captures

Readers: 9

Social Media

Shares, Likes & Comments: 2

Tweets: 3

[View details >](#)[About ScienceDirect](#)[Remote access](#)[Shopping cart](#)[Advertise](#)[Contact and support](#)[Terms and conditions](#)[Privacy policy](#)We use cookies to help provide and enhance our service and tailor content and ads. By continuing you agree to the [use of cookies](#).

Copyright © 2020 Elsevier B.V. or its licensors or contributors. ScienceDirect® is a registered trademark of Elsevier B.V.

ScienceDirect® is a registered trademark of Elsevier B.V.

[Feedback](#)