



NUTRITIONAL COMPOSITIONS FOR TREATING DYSFUNCTION OF LIVER FAT METABOLISM – VAFD

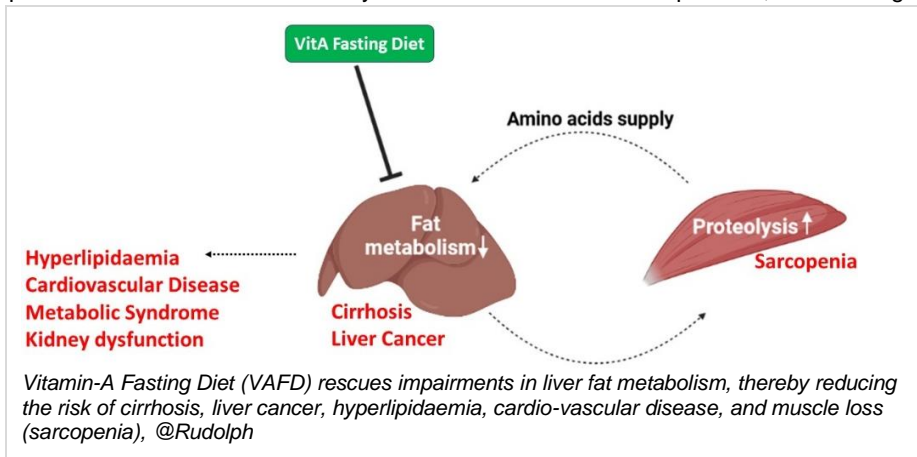
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INVENTION NOVELTY

Here we provide the first dietary intervention that improves liver fat metabolism without requiring a general reduction in food intake or a loss of body weight. The innovative vitamin-A fasting diet (VAFD) has a very strong capacity to enhance liver fat metabolism and also prevents secondary disease induced by fatty liver disease. No unwanted side-effects were observed for the VAFD indicating that it could achieve high compliance rates in patients.

VALUE PROPOSITION

Nearly one quarter of the German adult population suffers from metabolic disease associated fatty liver disease (MAFLD) formerly known as non-alcoholic fatty liver disease (NAFLD) or non-alcoholic steatohepatitis (NASH). MAFLD increases the risk of other diseases including metabolic syndrome, diabetes, cardiovascular disease, and skeletal muscle loss (sarcopenia). Improvements in liver fat metabolism represent a promising target to prevent MAFLD and associated diseases. The standard therapy is dietary restriction and physical activity to achieve 10% weight reduction. This therapeutic strategy has a compliance issue as 90% of the patients fail to adhere to it. Dietary interventions that solve this problem, are thus urgently needed.



TECHNOLOGY DESCRIPTION

The invention relates to a special composition of nutrients as a dietary treatment for preventing or treating an impairment or dysfunction of liver fat metabolism. The treatment does not require a general reduction in food intake but is based on specially composed meals substantially free of vitamin A and its derivatives. A temporary, repetitive vitamin A-free diet (VAFD) is projected to have a strong compliance advantage compared to standard care and has no unwanted side-effects of dietary restriction, such as muscle atrophy.

COMMERCIAL OPPORTUNITY

Nutritional composition for the treatment of fatty liver disease (MAFLD/NAFLD) and associated diseases, e.g. metabolic syndrome, cardiovascular disease, and muscle loss (sarcopenia). The technology is offered for co-development and/or licensing.

DEVELOPMENT STATUS

Data from *in vivo* studies in mice are available, demonstrating that vitamin-A fasting rescues impairments in liver fat metabolism and diseases associated with it (e.g. sarcopenia). A self-experiment of 4 volunteers shows that a 6-week VAFD treatment reduces lipids in human blood without leading to VitA deficiency.

PATENT SITUATION

A European priority application was filed 2022 (EP22188270.7), an international PCT application was filed on August 2, 2023.

FURTHER READING

Becker, F 2022. Vitamin A metabolism in niche cells activates retinoic acid signaling and impairs stem cell function and skeletal muscle maintenance in aging mice. PhD Thesis, Friedrich-Schiller University Jena.

Becker et al. 2023. Evolution, mechanism and limits of dietary restriction induced health benefits & longevity. Redox Biology Volume 63, July 2023, 102725. <https://doi.org/10.1016/j.redox.2023.102725>

