Dra. Silvia Ferolla

ESTEATO-HEPATITE METABÓLICA:

como reduzir inflamação com a nutrição integrativa ?

PhD e mestre em Saúde do Adulto área de concentração em Aparelho Digestivo UFMG
Autora do Livro Dieta Low LOWFODMAP: fundamentos e aplicações clínicas

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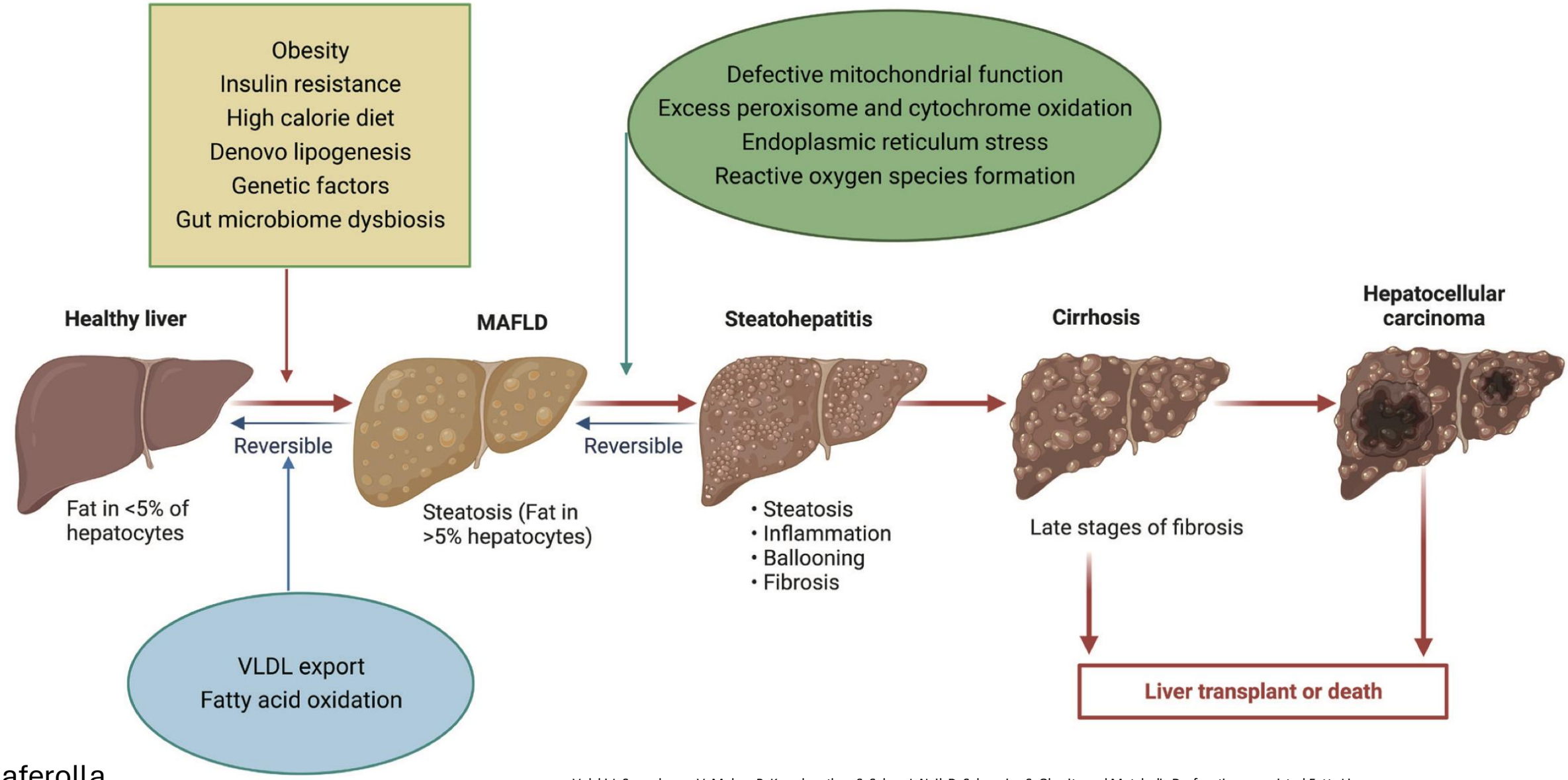
CONGRESSO INTERNACIONAL NUTRIÇÃO INTEGRATIVA

FREE FROM FOOD & SUPPLEMENT SOUTH AMERICA

AMSTERDÃ BANGKOK DUBAI SÃO PAULO

Espectro da Doença Hepática Gordurosa Metabólica (MALFD)



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Vulchi J, Suryadevara V, Mohan P, Kamalanathan S, Sahoo J, Naik D, Selvarajan S. Obesity and Metabolic Dysfunction-associated Fatty Liver Disease: Understanding the Intricate Link. J Transl Gastroenterol. 2023;1(2):74-86. doi: 10.14218/JTG.2023.00043.

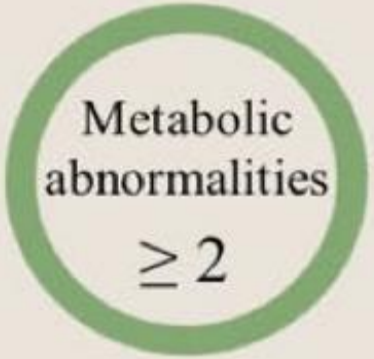
MAFLD diagnosis:

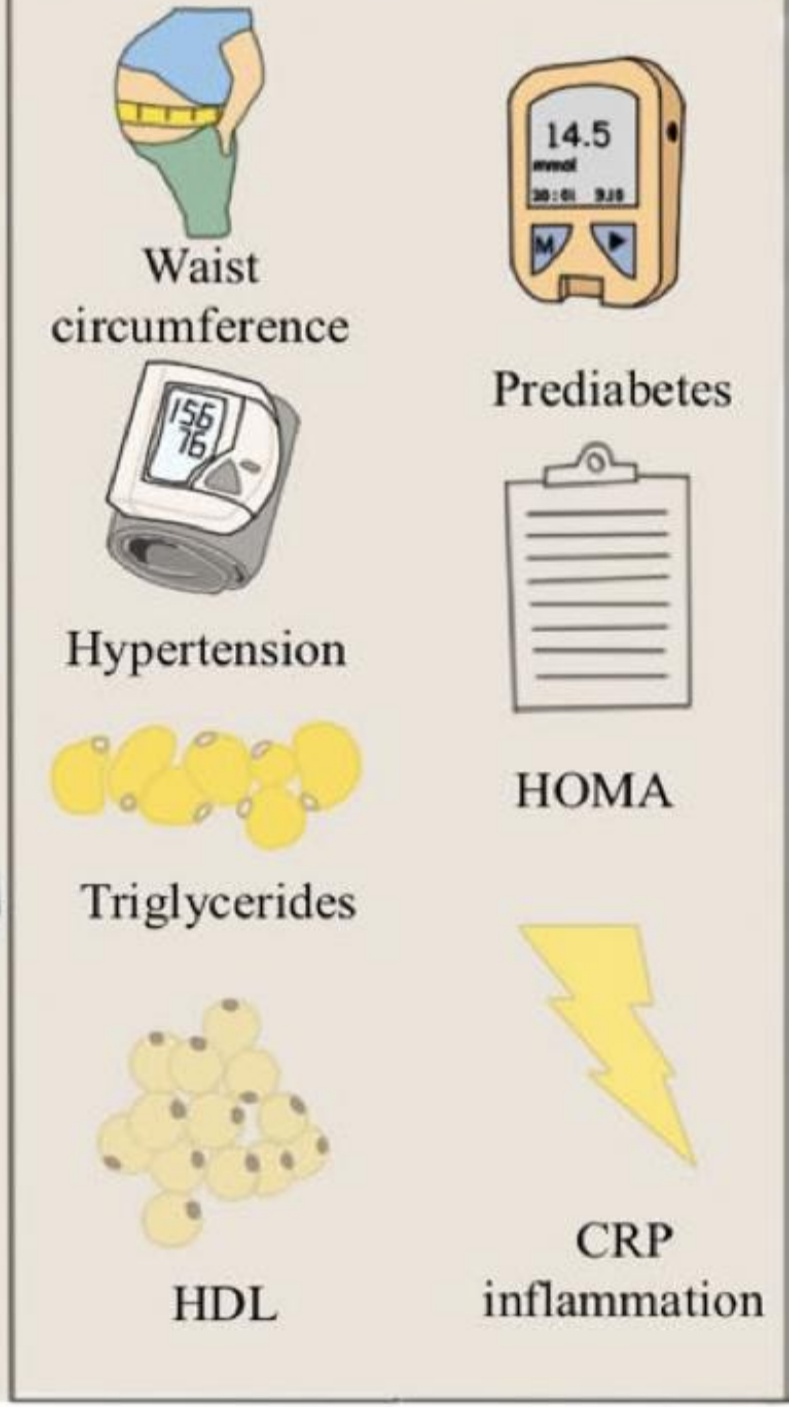
Hepatic steatosis plus one of the 3 criteria

- Overweight or obesity
- Type 2 diabetes mellitus
- At least two metabolic risk abnormalities

or

or





Zhou XD, Cai J, Targher G, Byrne CD, Shapiro MD, Sung KC, Somers VK, Chahal CAA, George J, Chen LL, Zhou Y, Zheng MH; CHESS-MAFLD consortium. Metabolic dysfunction-associated fatty liver disease and implications for cardiovascular risk and disease prevention. Cardiovasc Diabetol. 2022 Dec 3;21(1):270. doi: 10.1186/s12933-022-01697-0. PMID: 36463192; PMCID: PMC9719631.

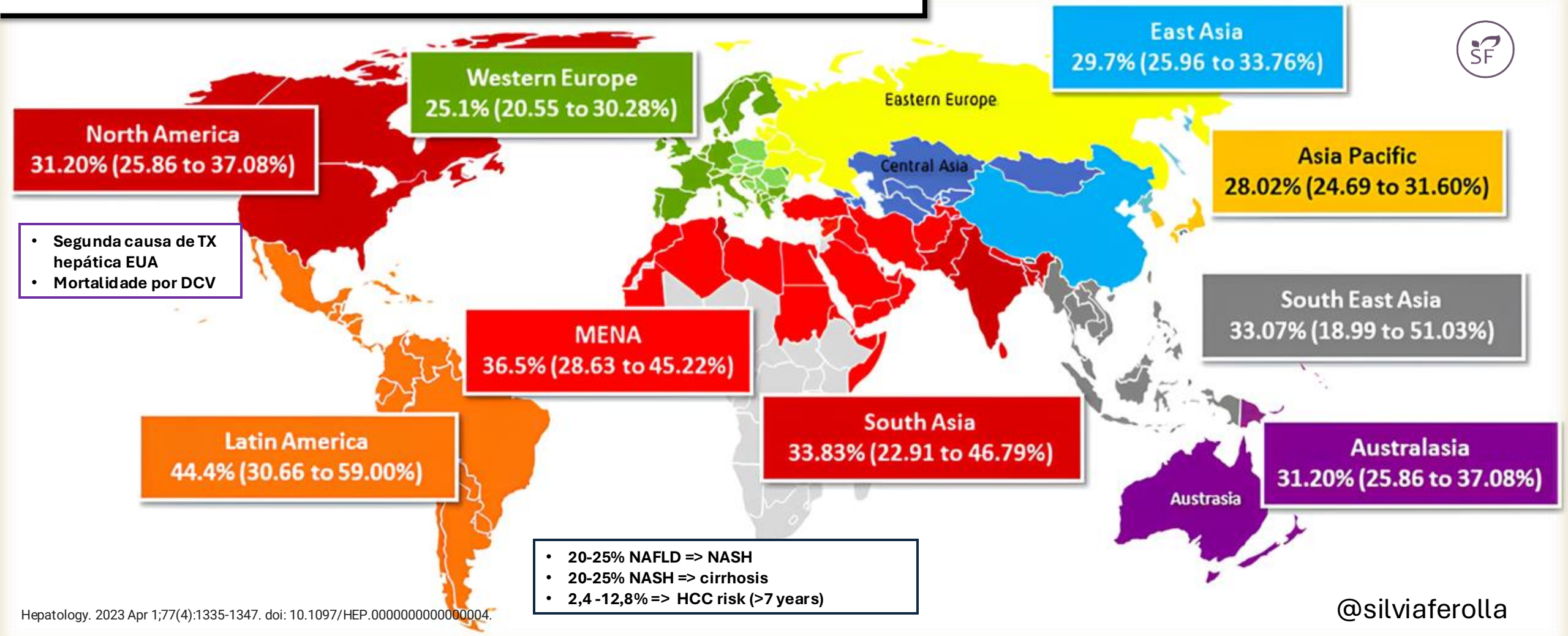
DOI: 10.1097/HEP.0000000000000004

ORIGINAL ARTICLE

OPEN

The global epidemiology of nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH): a systematic review

PREVALÊNCIA



- Segunda causa de TX hepática EUA
- Mortalidade por DCV

- 20-25% NAFLD => NASH
- 20-25% NASH => cirrhosis
- 2,4 -12,8% => HCC risk (>7 years)

Hepatology. 2023 Apr 1;77(4):1335-1347. doi: 10.1097/HEP.0000000000000004.

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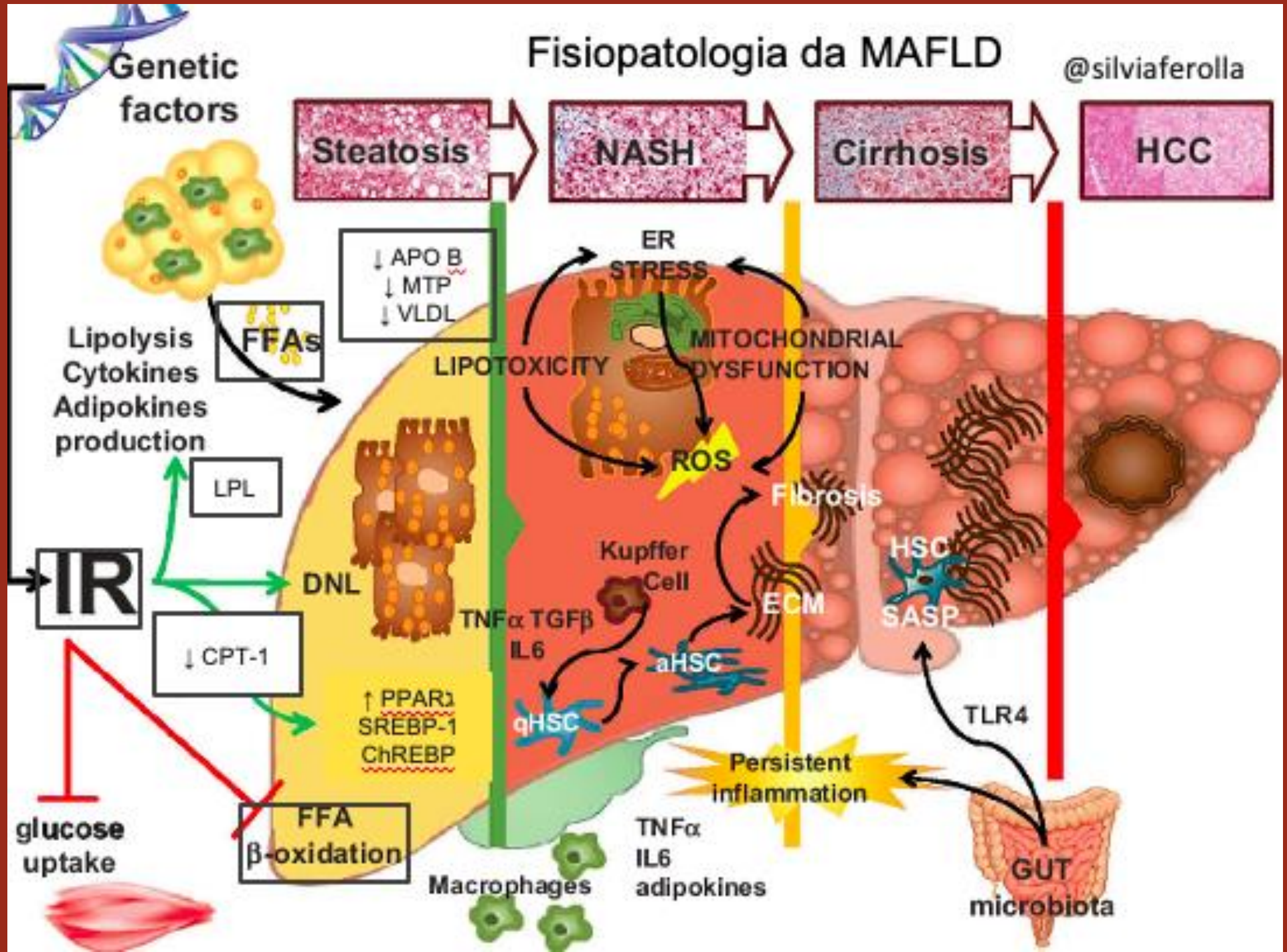
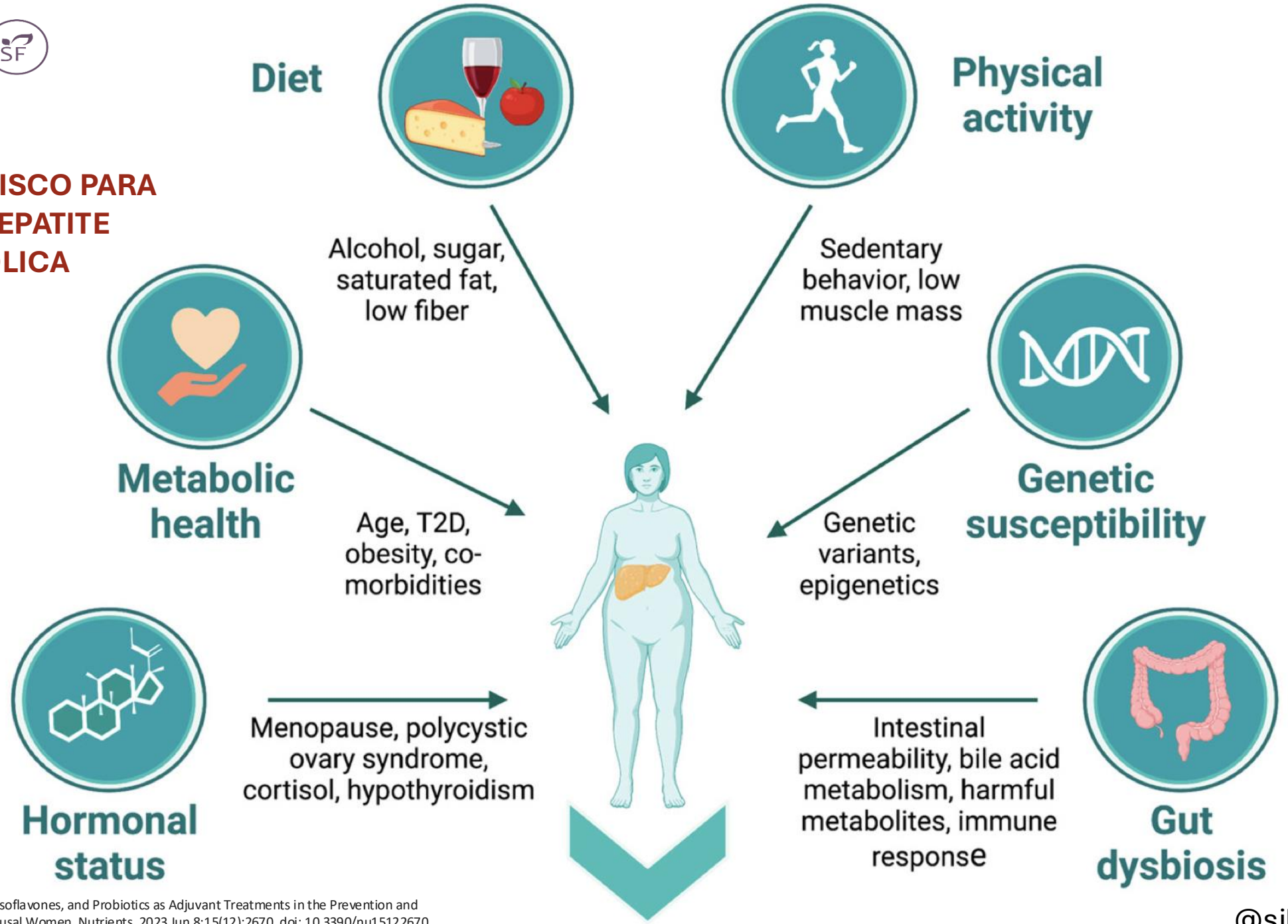


Bessone, Fernando & Razori, María & Roma, Marcelo. (2019). Molecular pathways of nonalcoholic fatty liver disease development and progression. Cellular and Molecular Life Sciences. 76. 10.1007/s00018-018-2947-0.

FATORES DE RISCO PARA ESTEATO-HEPATITE METABÓLICA



DiStefano JK. The Role of Choline, Soy Isoflavones, and Probiotics as Adjuvant Treatments in the Prevention and Management of NAFLD in Postmenopausal Women. Nutrients. 2023 Jun 8;15(12):2670. doi: 10.3390/nu15122670. PMID: 37375574; PMCID: PMC10304350.

EIXO INTESTINO-FÍGADO

OPEN ACCESS

nutrients

ISSN 2072-6643

www.mdpi.com/journal/nutrients

Review

doi: 10.3390/nu6125583.

The Role of Intestinal Bacteria Overgrowth in Obesity-Related Nonalcoholic Fatty Liver Disease

Silvia M. Ferolla *, Geyza N. A. Armiliato †, Cláudia A. Couto † and Teresa C. A. Ferrari *

nutrients SF DOI: 10.3390/nu8070397 MDPI

Article

Beneficial Effect of Synbiotic Supplementation on Hepatic Steatosis and Anthropometric Parameters, But Not on Gut Permeability in a Population with Nonalcoholic Steatohepatitis

Silvia M. Ferolla [1,*], Cláudia A. Couto [1], Luciana Costa-Silva [2], Geyza N. A. Armiliato [1], [illegible], Flaviano S. Martins [3], Maria de Lourdes A. Ferrari [1], Eduardo G. Vilela [1], Henrique O. G. Torres [1], Aloísio S. Cunha [1] and Teresa C. A. Ferrari [1,*]

https://doi.org/10.1590/1516-3180.2021.0015.R1.14062021 ORIGINAL ARTICLE

High prevalence of functional dyspepsia in nonalcoholic fatty liver disease: a cross-sectional study

Érika Cristina Lima[I], Maria do Carmo Friche Passos[II], Silvia Marinho Ferolla[III], Raissa Soares Neves da Costa[IV], Quelson Coelho Lisboa[V], Lucas Ismael Dias Pereira[VI], Mateus Jorge [illegible], Claudia Alves Couto[X]

World Journal of Hepatology

Submit a Manuscript: http://www.wjgnet.com/esps/
Help Desk: http://www.wjgnet.com/esps/helpdesk.aspx
DOI: 10.4254/wjh.v7.i3.559

World J Hepatol 2015 March 27; 7(3): 559-565
ISSN 1948-5182 (o[illegible])
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MINIREV

Probiotics as a complementary therapeutic approach in nonalcoholic fatty liver disease

doi: 10.4254/wjh.v7.i3.55

Silvia Marinho Ferolla, Geyza Nogueira de Almeida Armiliato, Cláudia Alves Couto, Teresa Cristina Abreu Ferrari

World Journal of Hepatology

Submit a Manuscript: http://www.wjgnet.com/esps/
Help Desk: http://www.wjgnet.com/esps/helpdesk.aspx
DOI: 10.4254/wjh.v7.i24.2522

World J Hepatol 2015 October 28; 7(24): 2522-2534
ISSN 1948-5182 (online)
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REVIEW

Dietary approach in the treatment of nonalcoholic fatty liver disease

Silvia Marinho Ferolla, Luciana Costa Silva, Maria de Lourdes Abreu Ferrari, Aloísio Sales da Cunha, Flaviano [illegible]udia Alves Couto, Teresa Cristina Abreu Ferrari

Silvia Marinho Ferolla

Microbiota intestinal e doença gordurosa hepática

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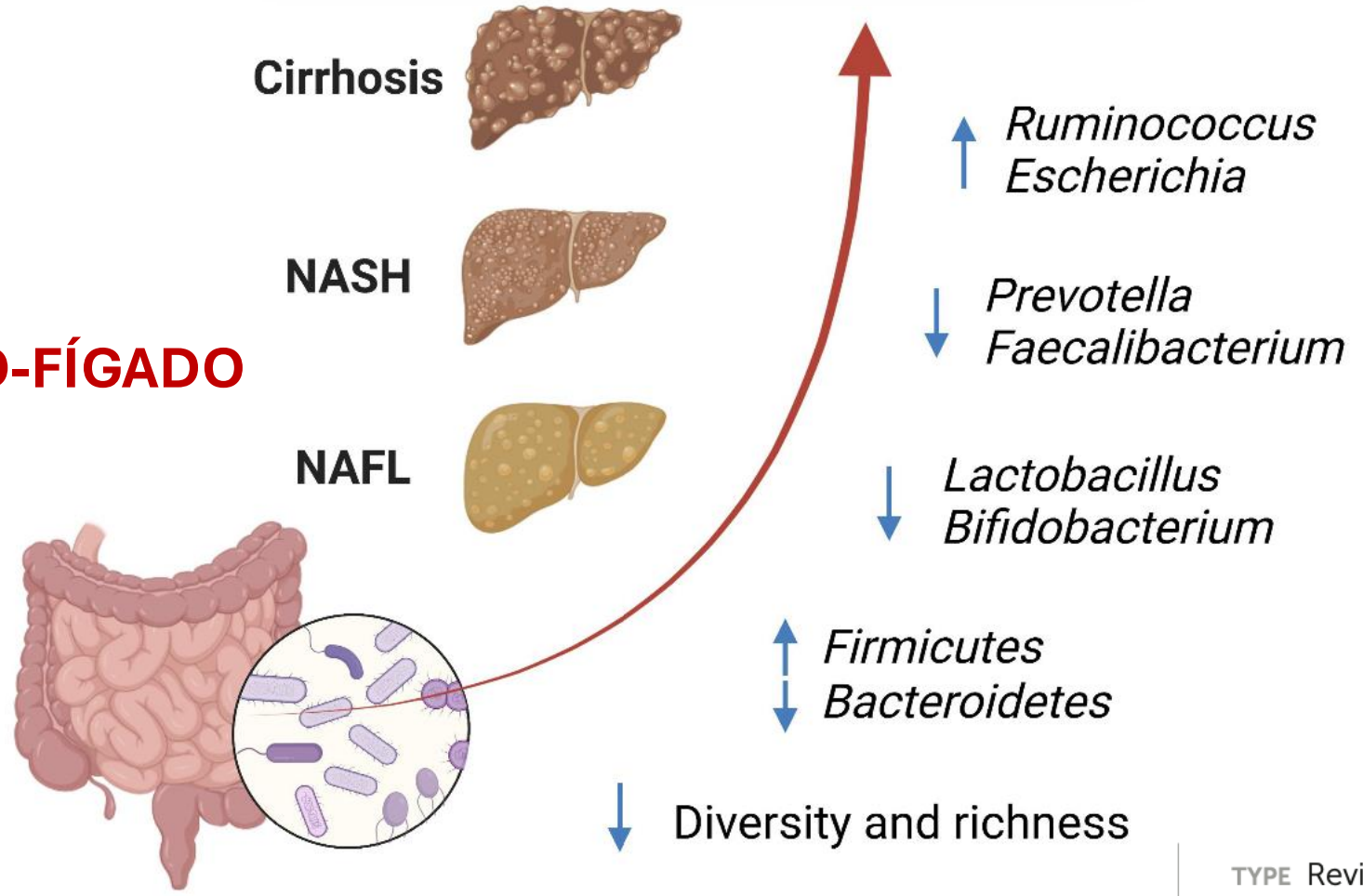
frontiers | Frontiers in Nutrition

Gut microbiota modulation in patients with non-alcoholic fatty liver disease: Effects of current treatments and future strategies

EIXO INTESTINO-FÍGADO



TYPE Review
PUBLISHED 16 February 2023
DOI 10.3389/fnut.2023.1110536

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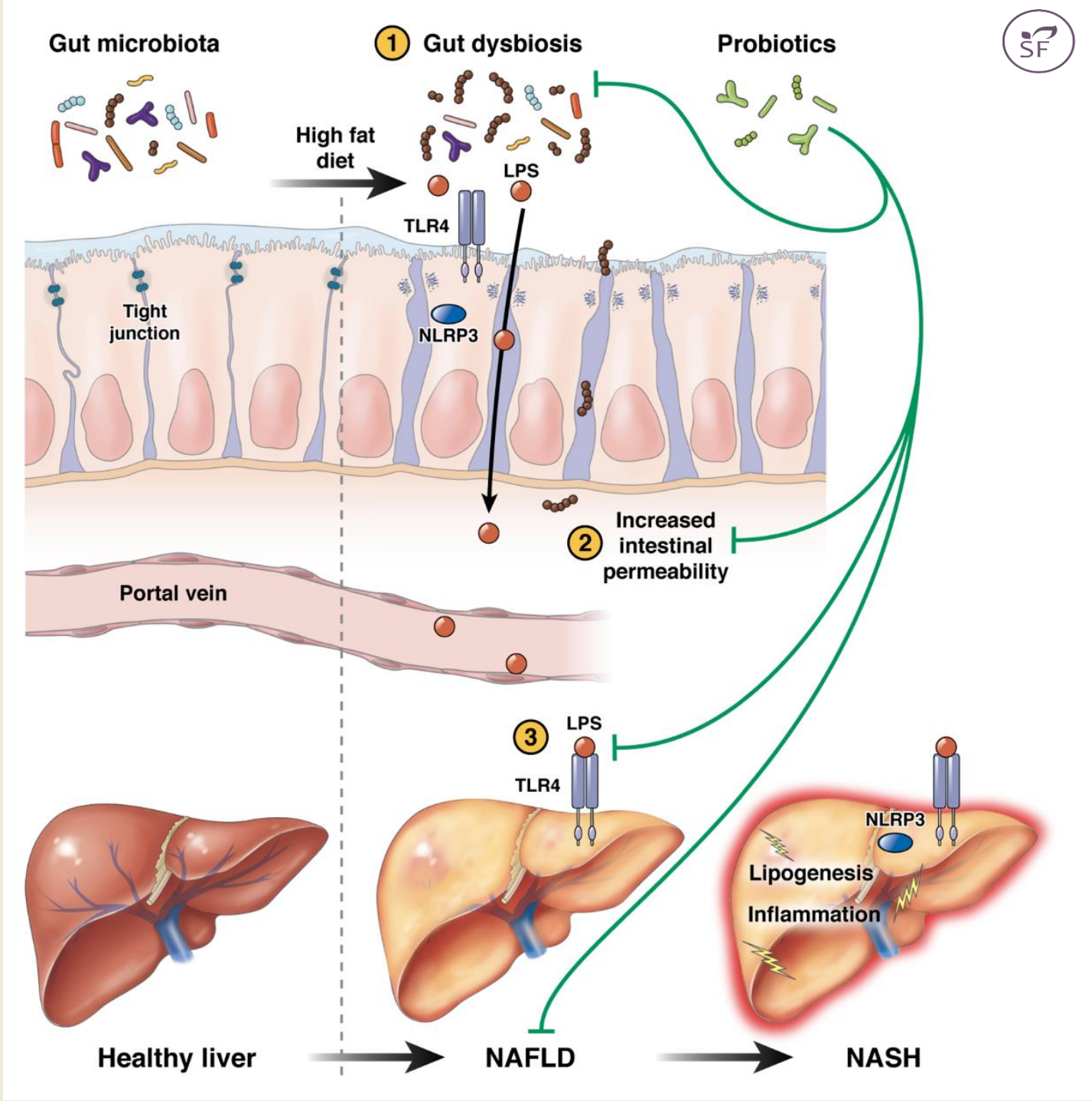
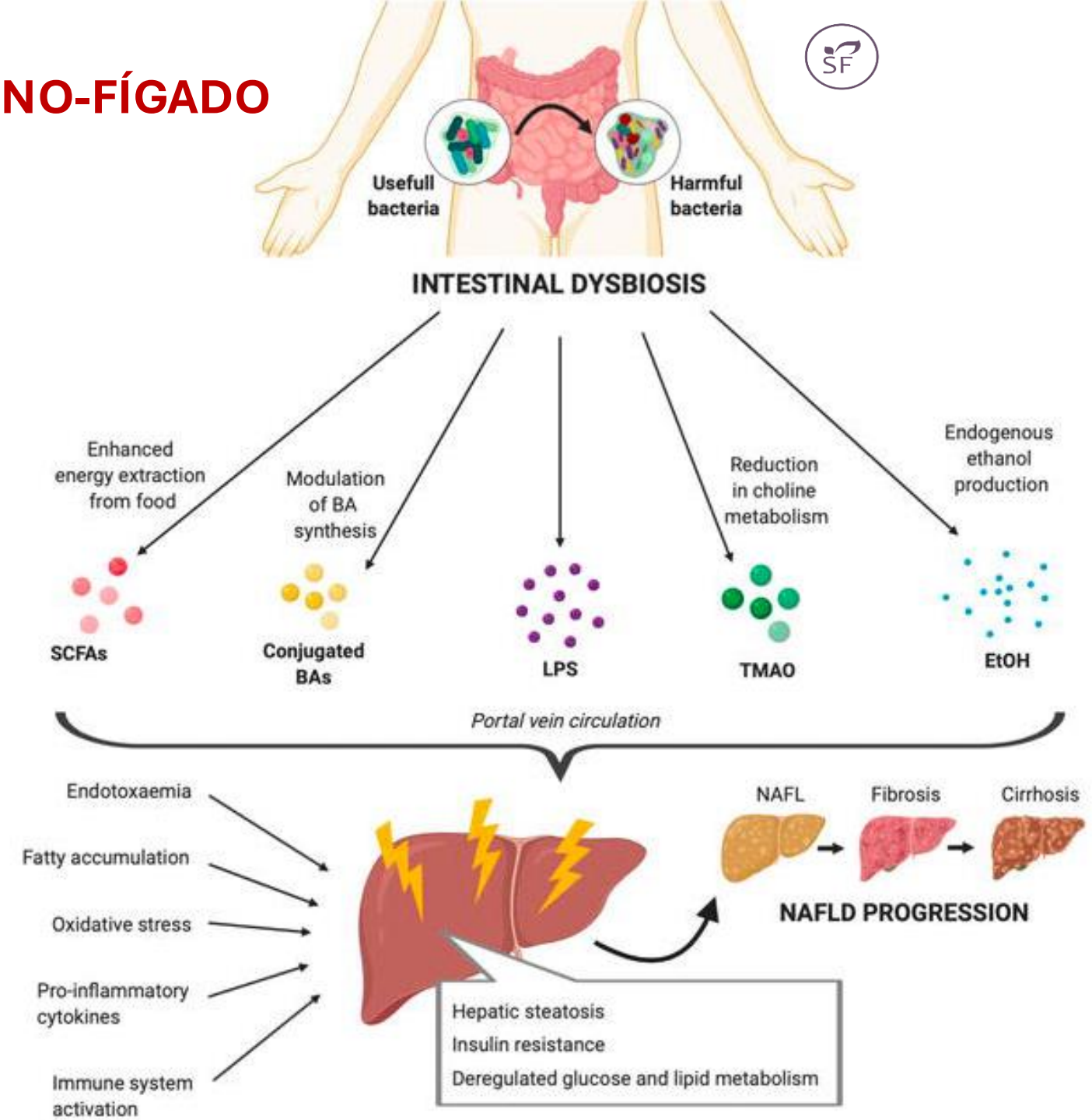


Aron-Wisnewsky J, Warmbrunn MV, Nieuwdorp M, Clément K. Nonalcoholic Fatty Liver Disease: Modulating Gut Microbiota to Improve Severity? Gastroenterology. 2020 May;158(7):1881-1898. doi: 10.1053/j.gastro.2020.01.049. Epub 2020 Feb 8. PMID: 32044317.

EIXO INTESTINO-FÍGADO



Auguet, Teresa & Bertran Ramos, Laia & Binetti, Jessica. (2020). Intestinal Dysbiosis and Non-Alcoholic Fatty Liver Disease. 10.5772/intechopen.92972.

Silvia Ferolla

ESTEATO-HEPATITE METABÓLICA:

como reduzir inflamação com a nutrição integrativa ?

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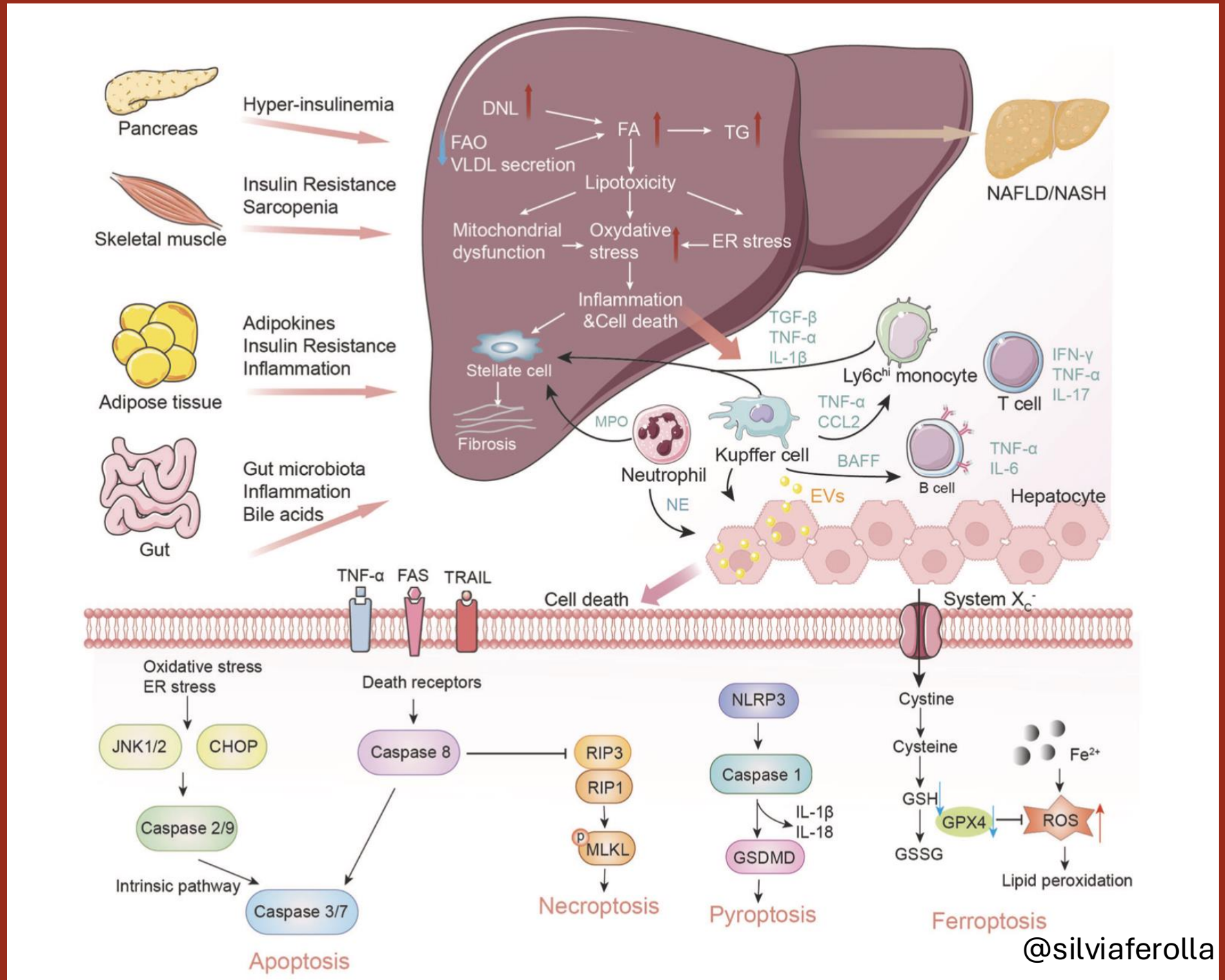
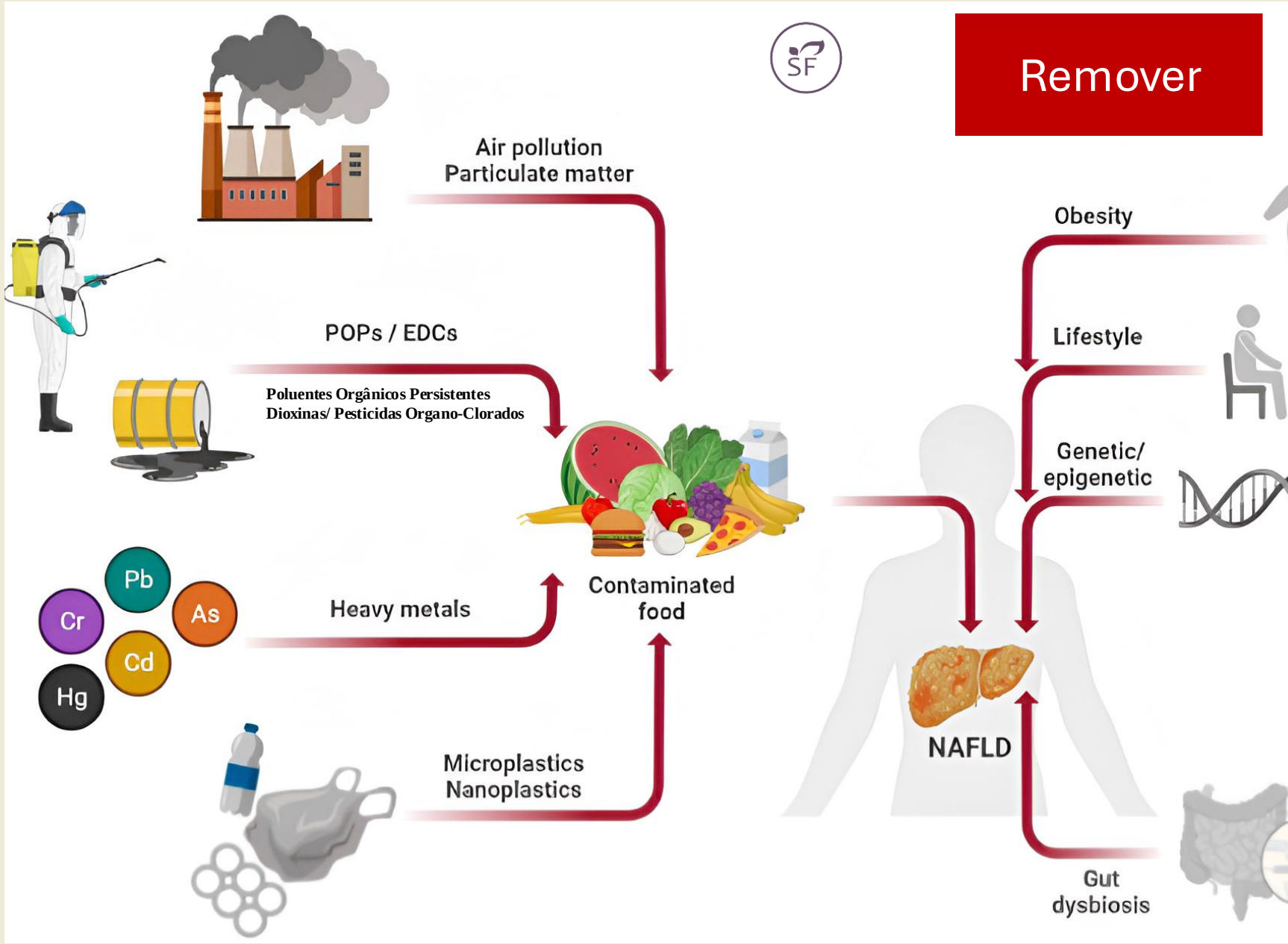
INFLAMAÇÃO NA ESTEATO-HEPATITE METABÓLICA



. PMID: 35963848; PMCID: PMC93761Xu X, Poulsen KL, Wu L, Liu S, Miyata T, Song Q, Wei Q, Zhao C, Lin C, Yang J. Targeted therapeutics and novel signaling pathways in non-alcohol-associated fatty liver/steatohepatitis (NAFL/NASH). Signal Transduct Target Ther. 2022 Aug 13;7(1):287. doi: 10.1038/s41392-022-01119-300.

A ingestão de poluentes ambientais, incluindo poluentes orgânicos persistentes (POPs), produtos químicos desreguladores endócrinos (EDCs), metais pesados, micro e nanoplásticos, promove o desenvolvimento e progressão da DHGM



Dolce A, Della Torre S. Sex, Nutrition, and NAFLD: Relevance of

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ADITIVOS ALIMENTARES E *EIXO INTESTINO FIGADO*

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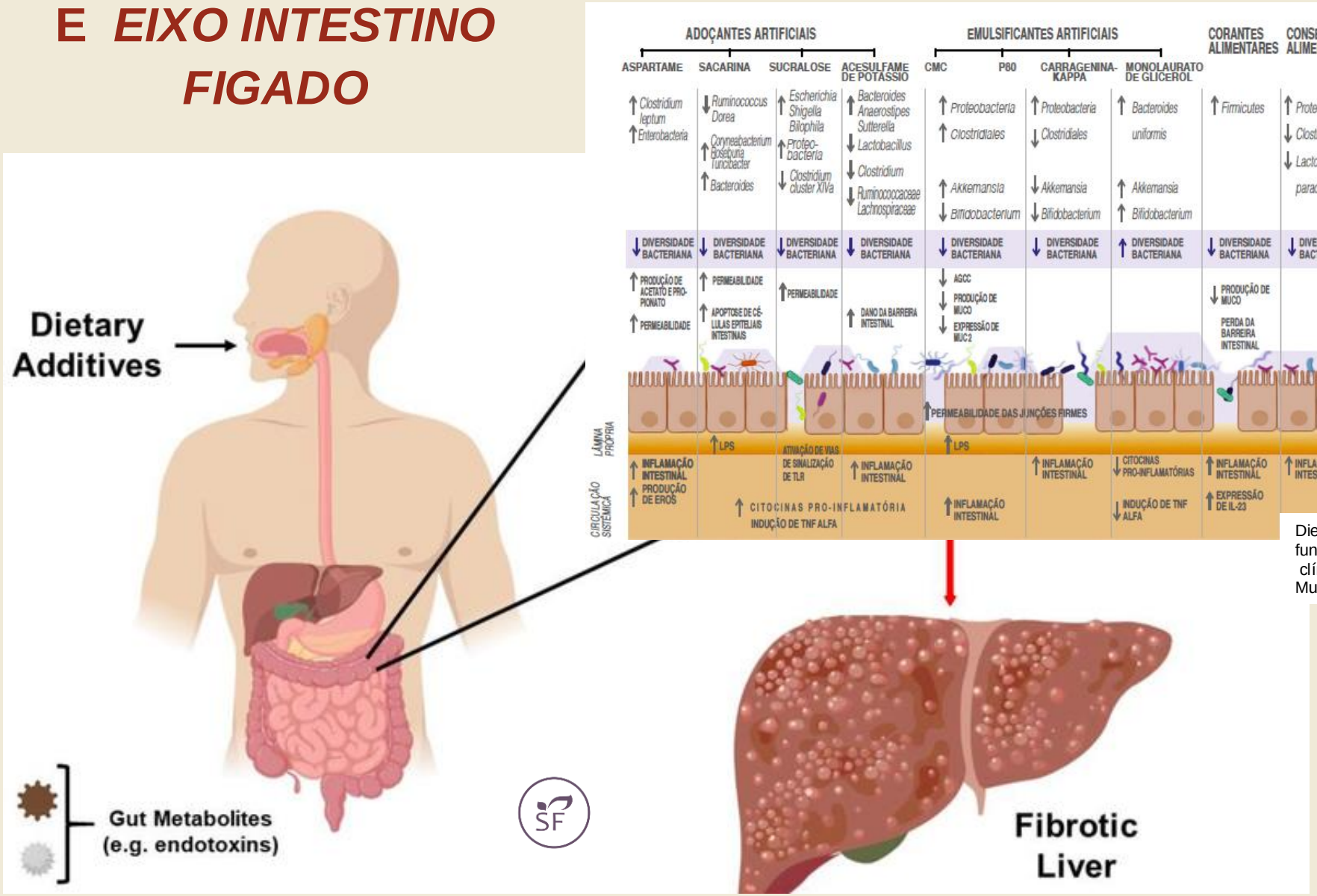

Dieta low fodmap: fundamentos e aplicações clínicas. Silvia Ferolla, Murilo Pereira, 2022

Golonka, R.M., Yeoh, B.S. & Vijay-Kumar, M. Dietary Additives and Supplements Revisited: the Fewer, the Safer for Gut and Liver Health. *Curr Pharmacol Rep* **5**, 303–316 (2019). https://doi.org/10.1007/s40495-019-00187-4

ULTRAPROCESSADOS E RISCO DE ESTEATO-HEPATITE METABÓLICA

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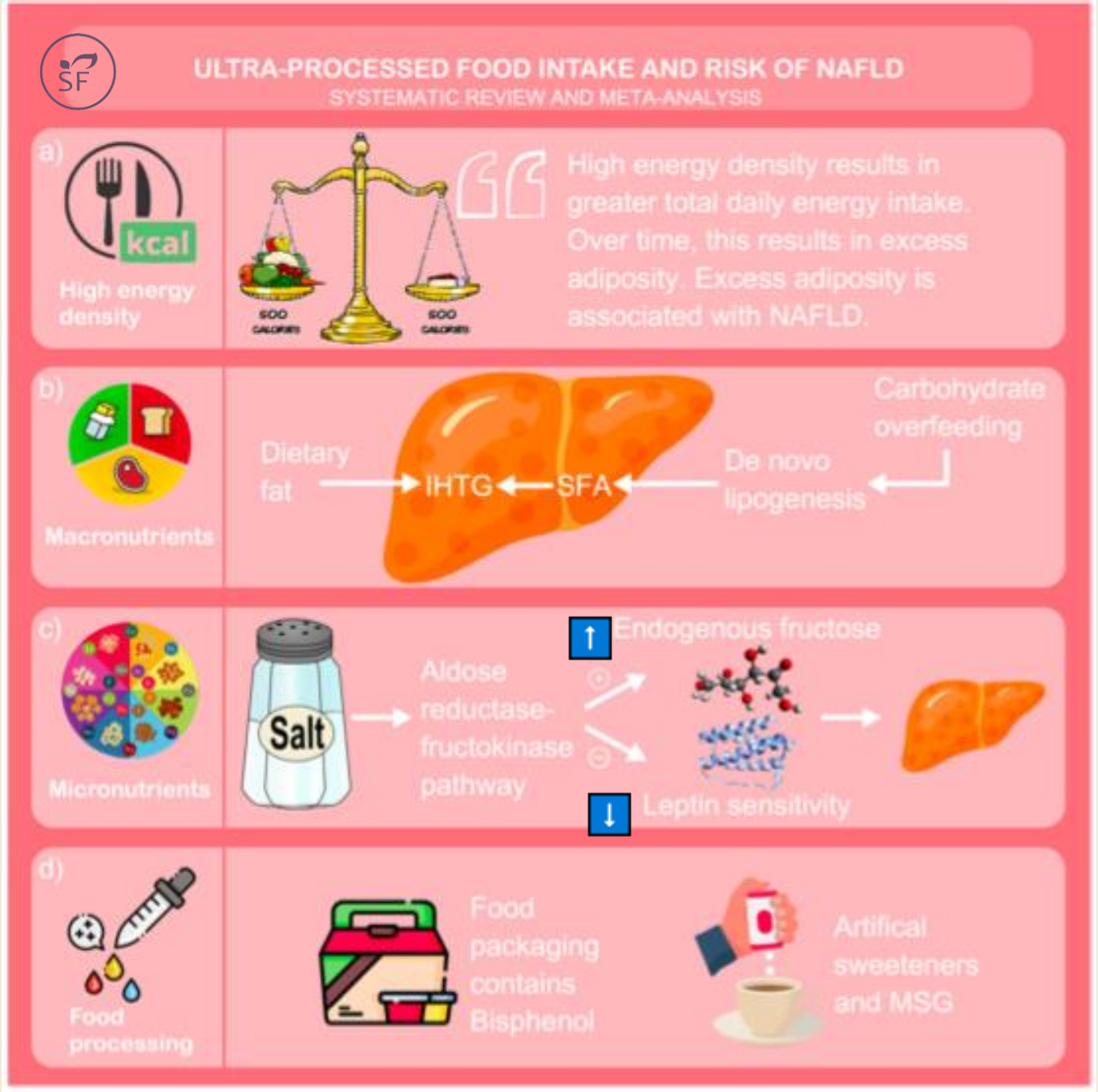

Henney AE, Gillespie CS, Alam U, Hydes TJ, Cuthbertson DJ. Ultra-Processed Food Intake Is Associated with Non-Alcoholic Fatty Liver Disease in Adults: A Systematic Review and Meta-Analysis. Nutrients. 2023 May 10;15(10):2266. doi: 10.3390/nu15102266. PMID: 37242149; PMCID: PMC10224355

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ULTRAPROCESSADOS E ESTEATO-HEPATITE METABÓLICA

The American Journal of Clinical Nutrition 119 (2024) 49–57

The American Journal of CLINICAL NUTRITION

journal homepage: https://ajcn.nutrition.org/

Original Research Article

Higher ultra-processed food intake is associated with adverse liver outcomes: a prospective cohort study of UK Biobank participants

Longgang Zhao [1,2], Alyssa Clay-Gilmour [1], Jiajia Zhang [1], Xuehong Zhang [2,3,†], Susan E. Steck [1,*,†]

[1] *Department of Epidemiology and Biostatistics, Arnold School of Public Health, University of South Carolina, Columbia, SC, United States;* [2] *Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, MA, United States;* [3] *Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, United States*

A B S T R A C T

Background: Ultra-processed food (UPF) intake has been positively associated with obesity and diabetes. The relationship between UPF intake and liver health has been scarcely studied.

Objectives: We aimed to evaluate the association of UPF intake with risk of adverse liver outcomes including nonalcoholic fatty liver disease (NAFLD), liver fibrosis/cirrhosis, liver cancer, severe liver disease, and serum biomarkers of liver health.

Methods: A total of 173,889 participants aged 40 to 69 y from the UK Biobank were included. UPF intake was defined using 24-h dietary recalls and NOVA classification. Liver outcome data were obtained from cancer registry, in-hospital records, and death registries. Serum biomarkers were measured at baseline. We used Cox proportional hazards models to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for associations between UPF and adverse liver outcomes adjusting for demographics, lifestyle factors, body mass index, and diabetes. We used multinomial logistic regression to evaluate associations between UPF and liver function biomarkers.

Results: After a median follow-up of 8.9 y, we documented 1108 NAFLD, 350 liver fibrosis/cirrhosis, 134 liver cancer, and 550 severe liver disease cases. Higher UPF intake was associated with increased risk of NAFLD ($HR_{Quartile\ 4\ vs.\ Quartile\ 1}$: 1.43; 95% CI: 1.21, 1.70; $P_{trend} < 0.001$), liver fibrosis/cirrhosis (HR: 1.18; 95% CI: 0.87, 1.59; $P_{trend} = 0.009$), and severe liver disease (HR: 1.50; 95% CI: 1.19, 1.90; $P_{trend} < 0.001$) but not with liver cancer (HR: 1.00; 95% CI: 0.63, 1.58; $P_{trend} = 0.88$). Higher UPF intake was associated with elevated levels of C-reactive protein, alkaline phosphatase, aspartate aminotransferase, γ-glutamyltransferase, and triglycerides and lower cholesterols (all $P_{trend} < 0.001$).

Conclusions: Higher UPF intake is associated with an increased risk of NAFLD, liver fibrosis and cirrhosis, and severe liver disease and adverse levels of multiple clinical biomarkers, suggesting the potential importance of reducing UPF intake to improve liver health.

Keywords: liver health, cirrhosis, liver cancer, NAFLD, ultra-processed food, prospective, cohort, biomarker

Duração do Estudo: 8,9

Casos Observados:
- 1108 casos de DHGNA
- 350 casos de fibrose/cirrose hepática
- 134 casos de câncer de fígado
- 550 casos de doença hepática avançada

- Associações de risco > consumo UP e:

- **Esteatose**: ↑ 43% no risco (quartil mais alto vs. mais baixo)
- **Doença Hepática Avançada**: ↑ 50% no risco

Marcadores Inflamatórios:
- níveis elevados de: PCR, FA, AST, GGT, TG

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CellPress

Cell Metabolism

Perspective

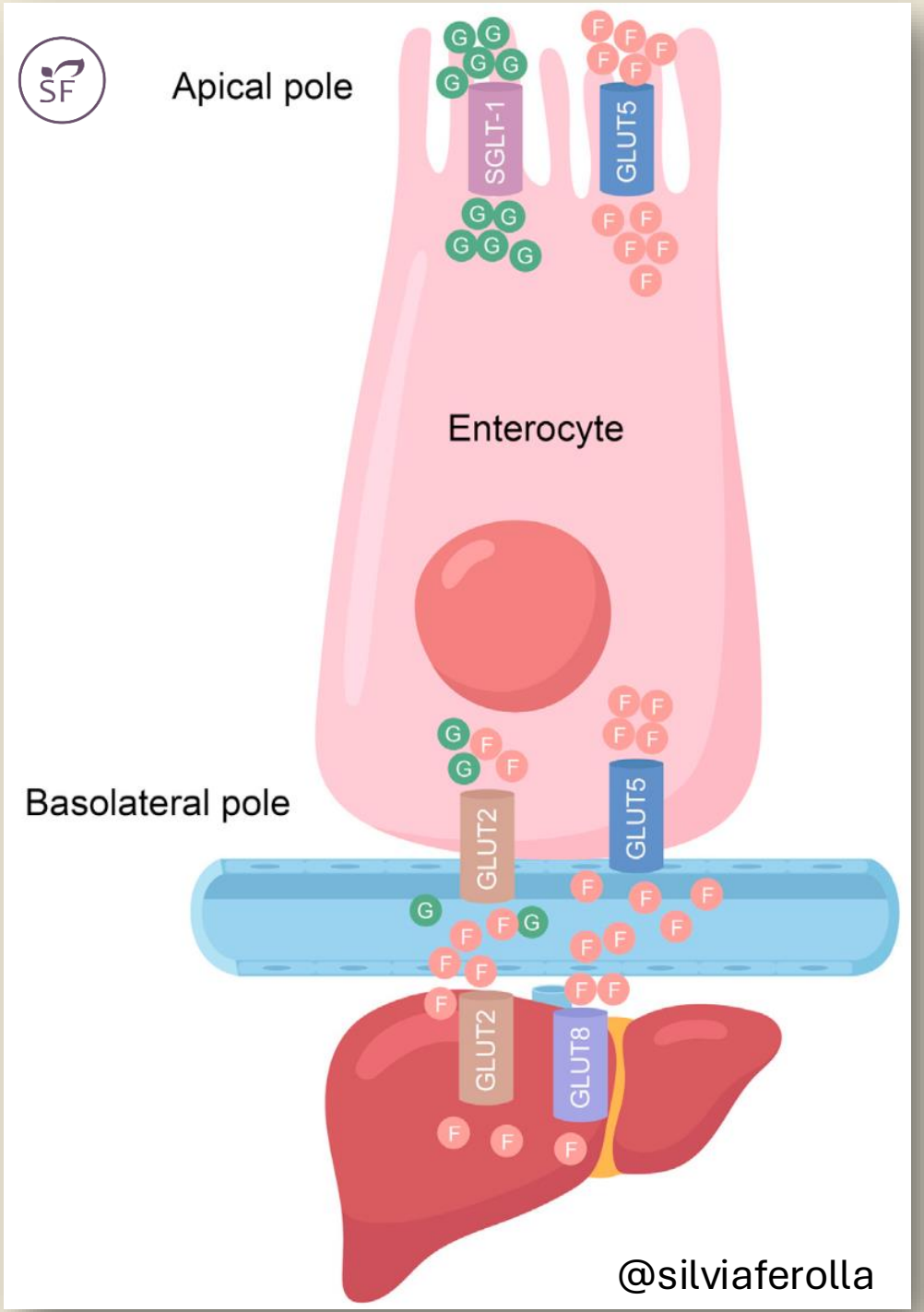
“Sweet death”: Fructose as a metabolic toxin that targets the gut-liver axis

Mark A. Febbraio[1,*] and Michael Karin[2,*]
[1]Monash Institute of Pharmaceutical Sciences, Monash University, Parkville, VIC, Australia
[2]Department of Pharmacology, School of Medicine, University of California, San Diego, San Diego, CA, USA
*Correspondence: mark.febbraio@monash.edu (M.A.F.), mkarin@health.ucsd.edu (M.K.)
https://doi.org/10.1016/j.cmet.2021.09.004

“Morte doce”: A frutose como uma toxina metabólica que afeta o eixo intestino-fígado

Remover

FRUTOSE E ESTEATO-HEPATITE METABÓLICA



Febbraio MA, Karin M. "Sweet death": Fructose as a metabolic toxin that targets the gut-liver axis. Cell Metab. 2021 Dec 7;33(12):2316-2328. doi: 10.1016/j.cmet.2021.09.004. Epub 2021 Oct 6. PMID: 34619076; PMCID: PMC8665123.

Metabolism

Dietary fructose expands the gut and aids fat uptake

Patrícia M. Nunes & Dimitrios Anastasiou

Feeding mice high-fructose corn syrup, a widely used sweetener in human diets, has been found to drive an increase in the surface area of the gut that is associated with enhanced absorption of dietary nutrients and weight gain. **See p.263**

nature

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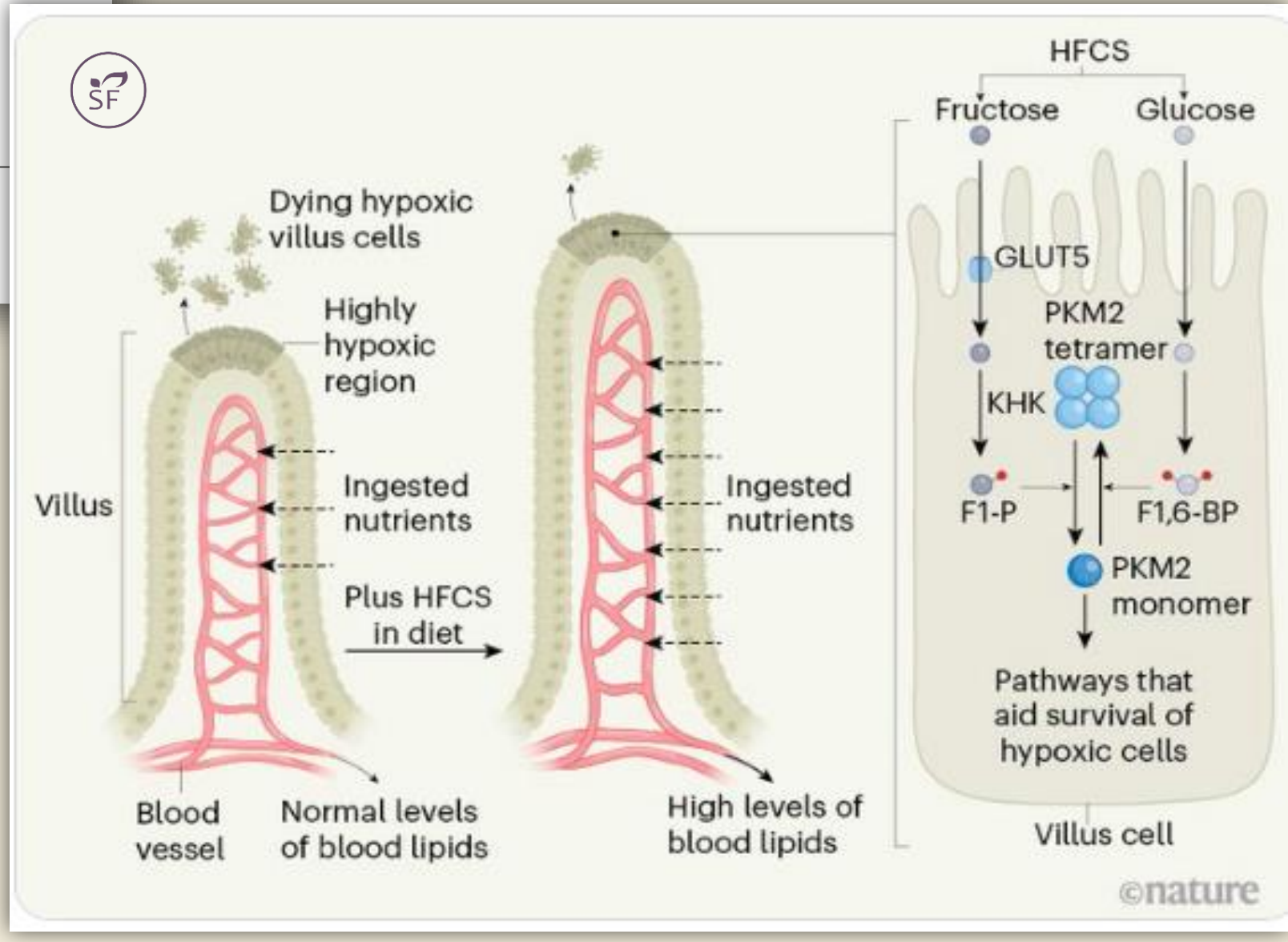

Nunes PM, Anastasiou D. Fructose in the diet expands the surface of the gut and promotes nutrient absorption. Nature. 2021 Sep;597(7875):180-182. doi: 10.1038/d41586-021-02195-1. PMID: 34408303.

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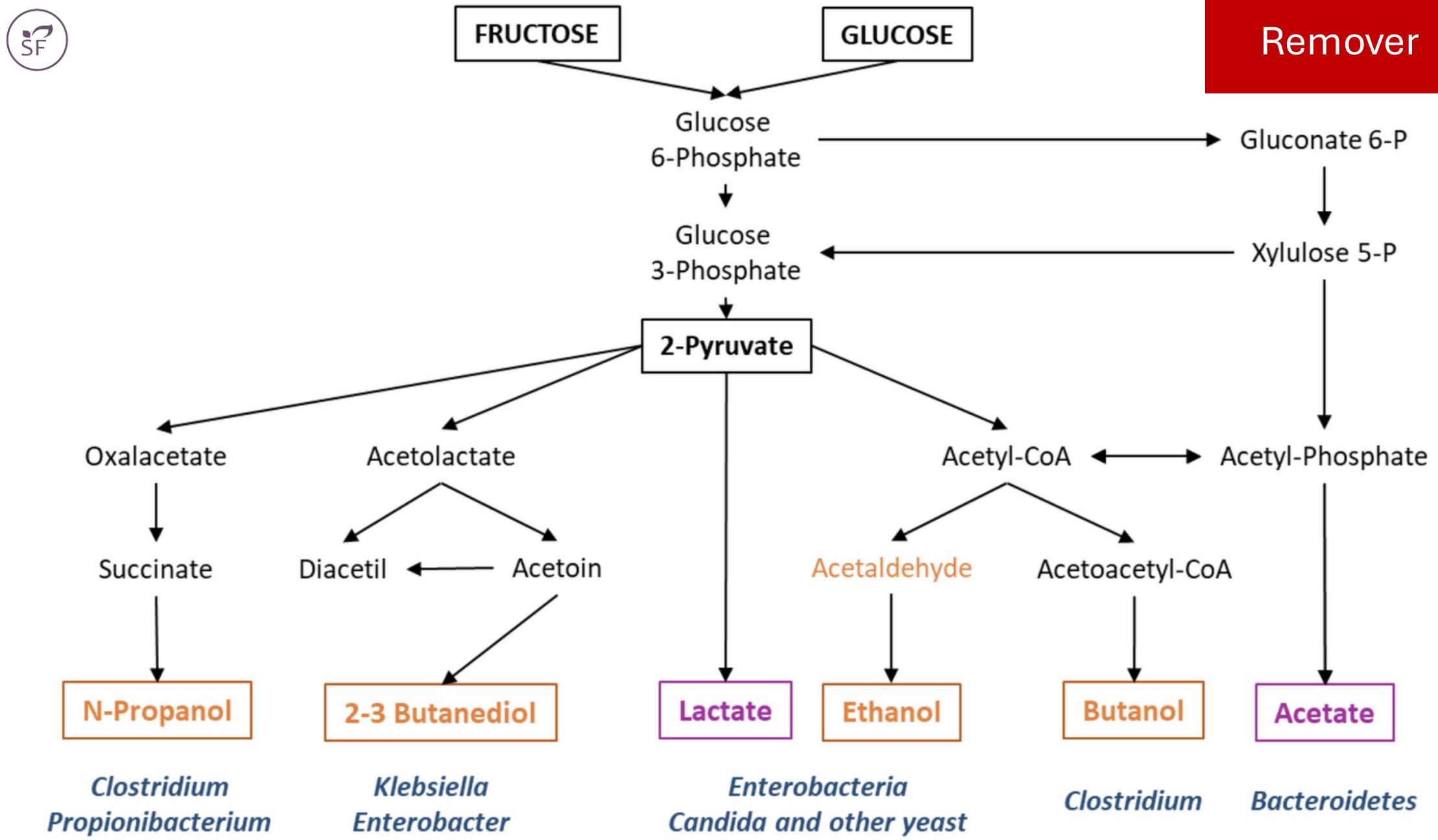

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Iruzubieta P, Medina JM, Fernández-López R, Crespo J, de la Cruz F. A Role for Gut Microbiome Fermentative Pathways in Fatty Liver Disease

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Perspective

“Sweet death”: Fructose as a metabolic toxin that targets the gut-liver axis

Mark A. Febbraio[1,*] and Michael Karin[2,*]
[1]Monash Institute of Pharmaceutical Sciences, Monash University, Parkville, VIC, Australia
[2]Department of Pharmacology, School of Medicine, University of California, San Diego, San Diego, CA, USA
*Correspondence: mark.febbraio@monash.edu (M.A.F.), mkarin@health.ucsd.edu (M.K.)
https://doi.org/10.1016/j.cmet.2021.09.004

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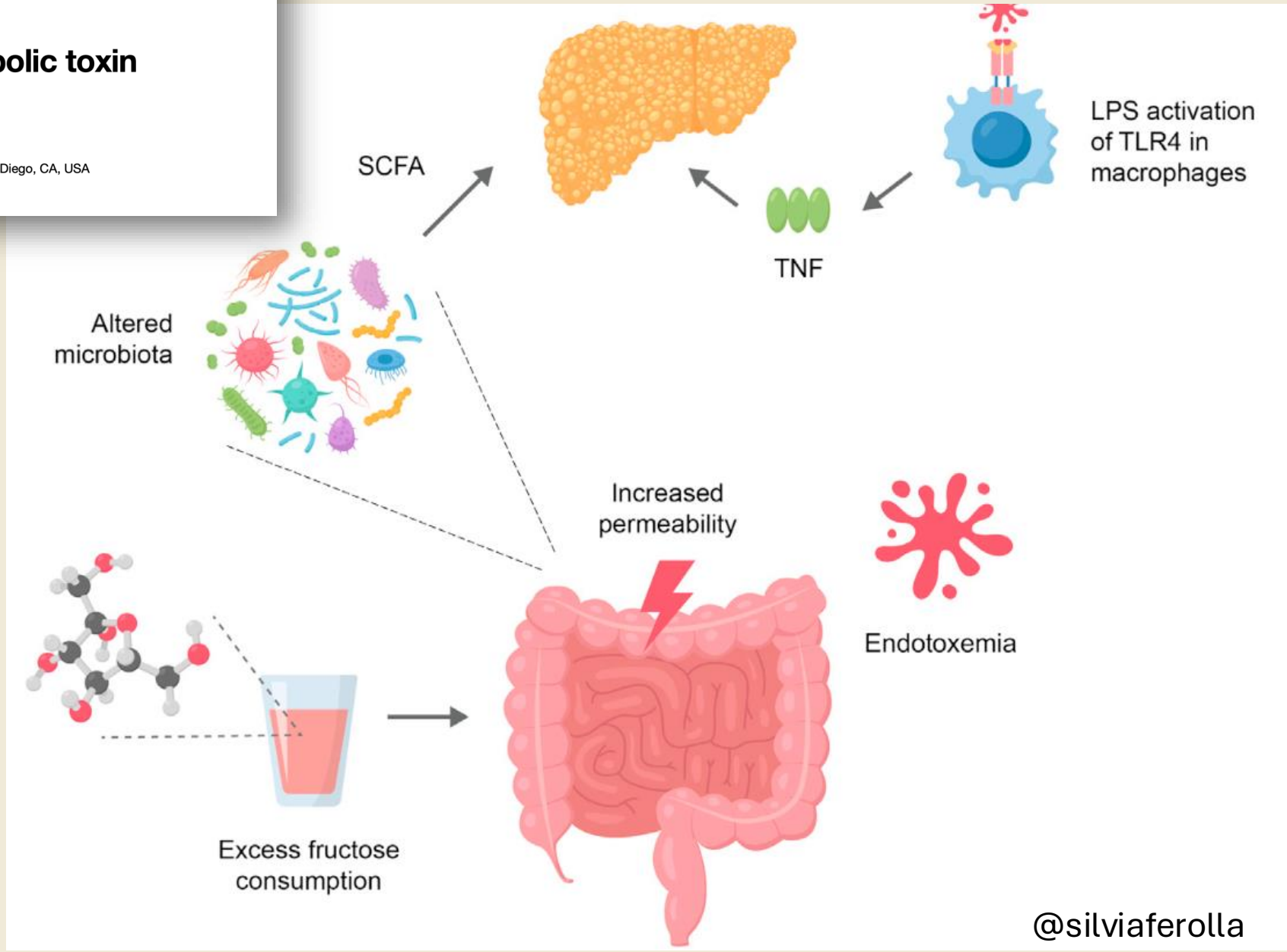
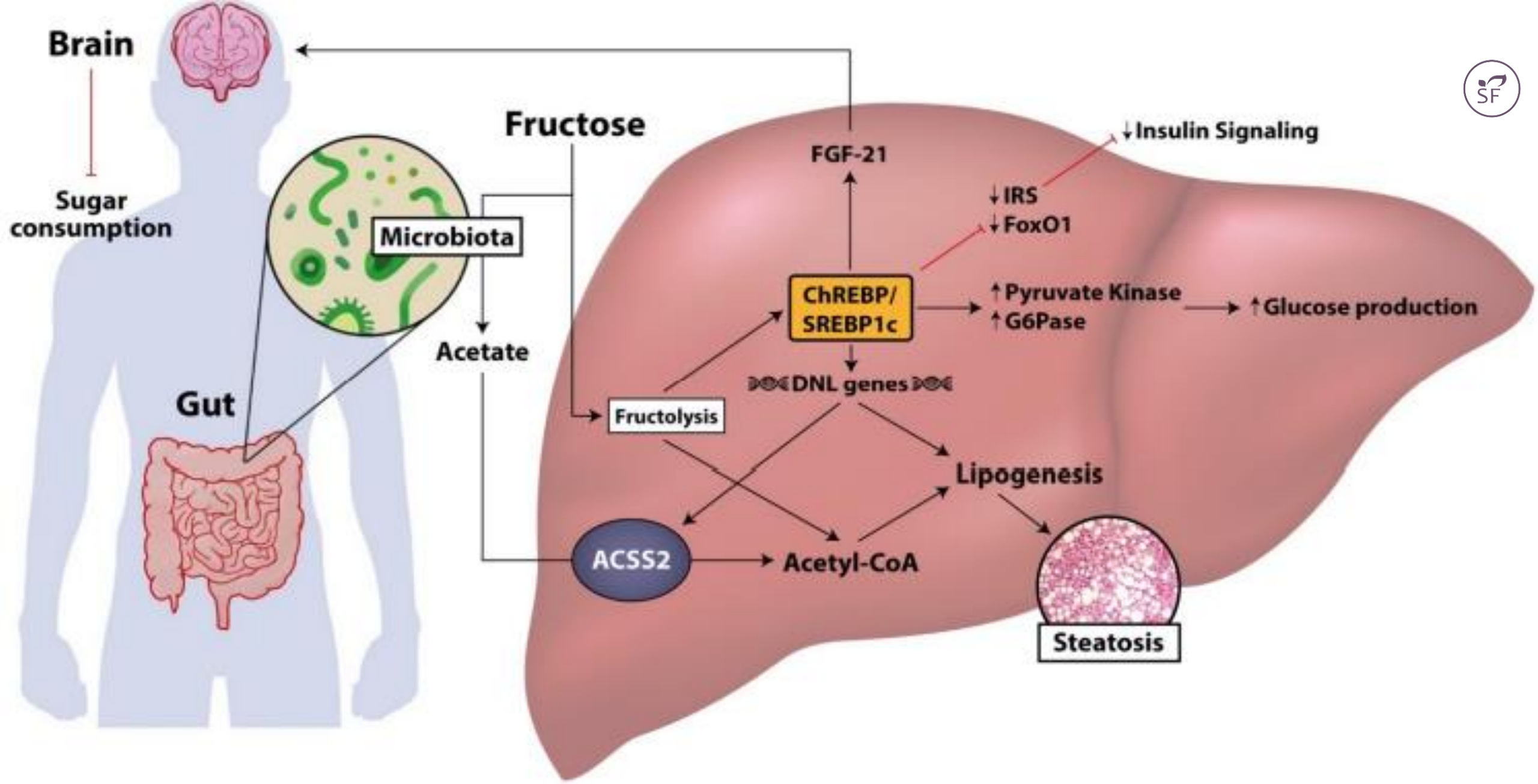
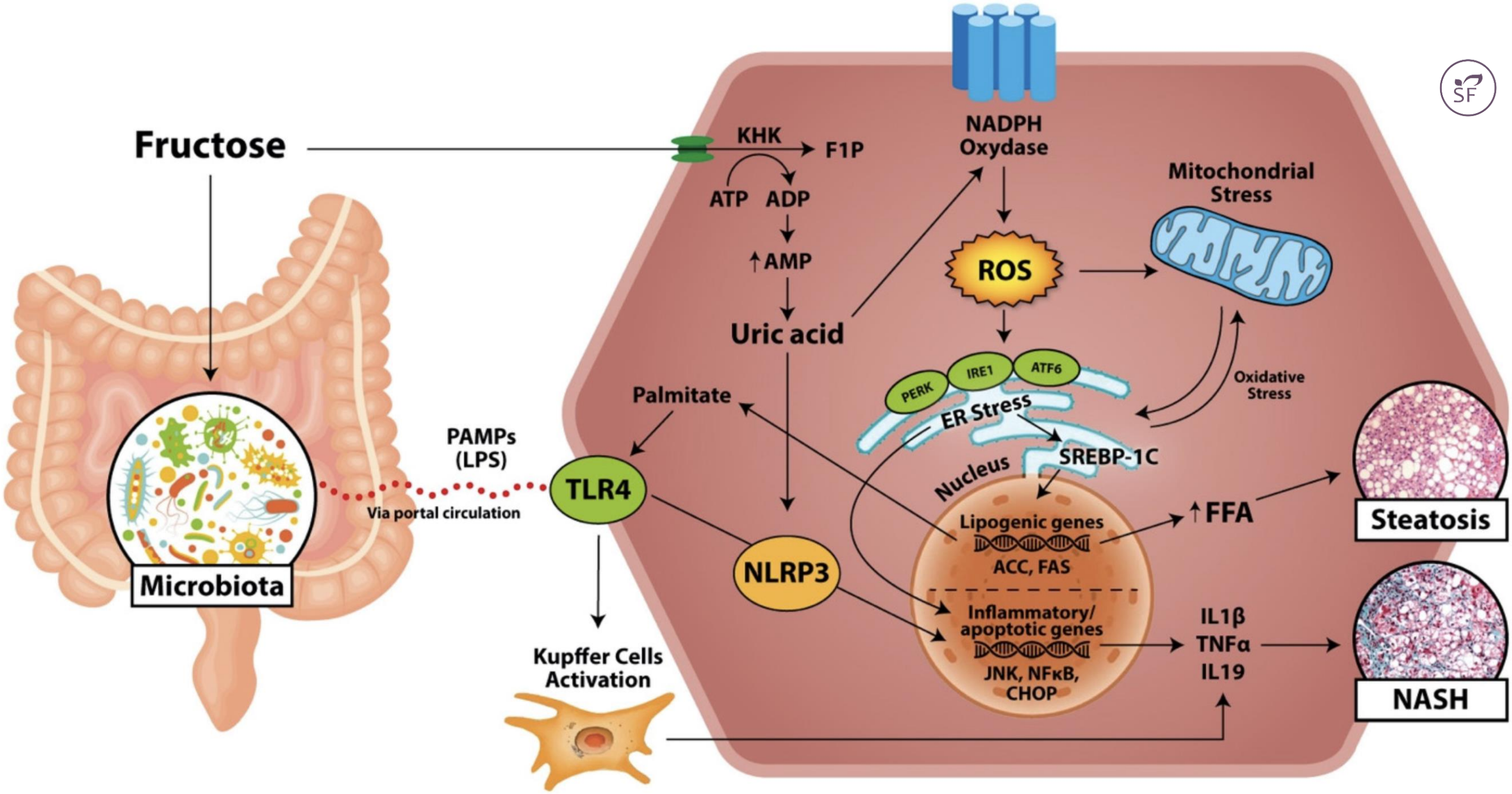


Febbraio MA, Karin M. "Sweet death": Fructose as a metabolic toxin that targets the gut-liver axis. Cell Metab. 2021 Dec 7;33(12):2316-2328. doi: 10.1016/j.cmet.2021.09.004. Epub 2021 Oct 6. PMID: 34619076; PMCID: PMC8665123.



Federico A, Rosato V, Masarone M, Torre P, Dallio M, Romeo M, Persico M. The Role of Fructose in Non-Alcoholic Steatohepatitis: Old Relationship and New Insights. Nutrients. 2021 Apr 16;13(4):1314. doi: 10.3390/nu13041314. PMID: 33923525; PMCID: PMC8074203.



Federico A, Rosato V, Masarone M, Torre P, Dallio M, Romeo M, Persico M. The Role of Fructose in Non-Alcoholic Steatohepatitis: Old Relationship and New Insights. Nutrients. 2021 Apr 16;13(4):1314. doi: 10.3390/nu13041314. PMID: 33923525; PMCID: PMC8074203.

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International Journal of *Environmental Research and Public Health*

MDPI

Article

Consumption of Sugar-Sweetened Beverages Has a Dose-Dependent Effect on the Risk of Non-Alcoholic Fatty Liver Disease: An Updated Systematic Review and Dose-Response Meta-Analysis

Abstract: *Background:* Non-alcoholic fatty liver disease (NAFLD) is a serious health problem, but th dose-response relationship between sugar-sweetened beverages (SSBs) and NAFLD remains uncertai *Methods:* A systematic review and dose-response meta-analysis were conducted following the PRISM (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Review Manage 5.3 and Stata 14.0 were used to combine trials and analyze data. The dose-response meta-analysi was performed by non-linear trend regression. *Results:* Twelve studies recruiting a total of 35,70 participants were included. The results showed that the consumption of SSBs was associated wit 1.39-fold increased odds of NAFLD (95% CI: 1.29–1.50, $p < 0.00001$). The risk of NAFLD rose wit an increased consumption of SSBs, while the consumptions of low doses (<1 cup/week), middle dose (1–6 cups/week) and high doses (≥7 cups/week) of SSBs increased the relative risk of NAFL by 14%, 26% and 53%, respectively ($p = 0.01$, $p < 0.00001$, $p = 0.03$, respectively). *Conclusions.* This study demonstrates that consumers of SSBs are at significantly increased risk of NAFL and the consumption of SSBs has a dose-dependent effect on the risk of NAFLD. The findings of thi study strengthen the evidence base for healthy dietary patterns and are meaningful for the primar prevention of NAFLD.

Metanálise com amostra de 35.705

Dose “pequena”< 1 copo/ sem. aumenta 14% RR de DHGM

Dose “moderada”1 a 6 copos/ sem. aumenta 26% RR de DHGM

Dose “alta”>= 7 copos/ sem. aumenta 53% RR de DHGM

Chen H, Wang J, Li Z, Lam CWK, Xiao Y, Wu Q, Zhang W. Consumption of Sugar-Sweetened Beverages Has a Dose-Dependent Effect on the Risk of Non-Alcoholic Fatty Liver Disease: An Updated Systematic Review and Dose-Response Meta-Analysis. Int J Environ Res Public Health. 2019 Jun 21;16(12):2192. doi: 10.3390/ijerph16122192. PMID: 31234281; PMCID: PMC6617076.

JCEM THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

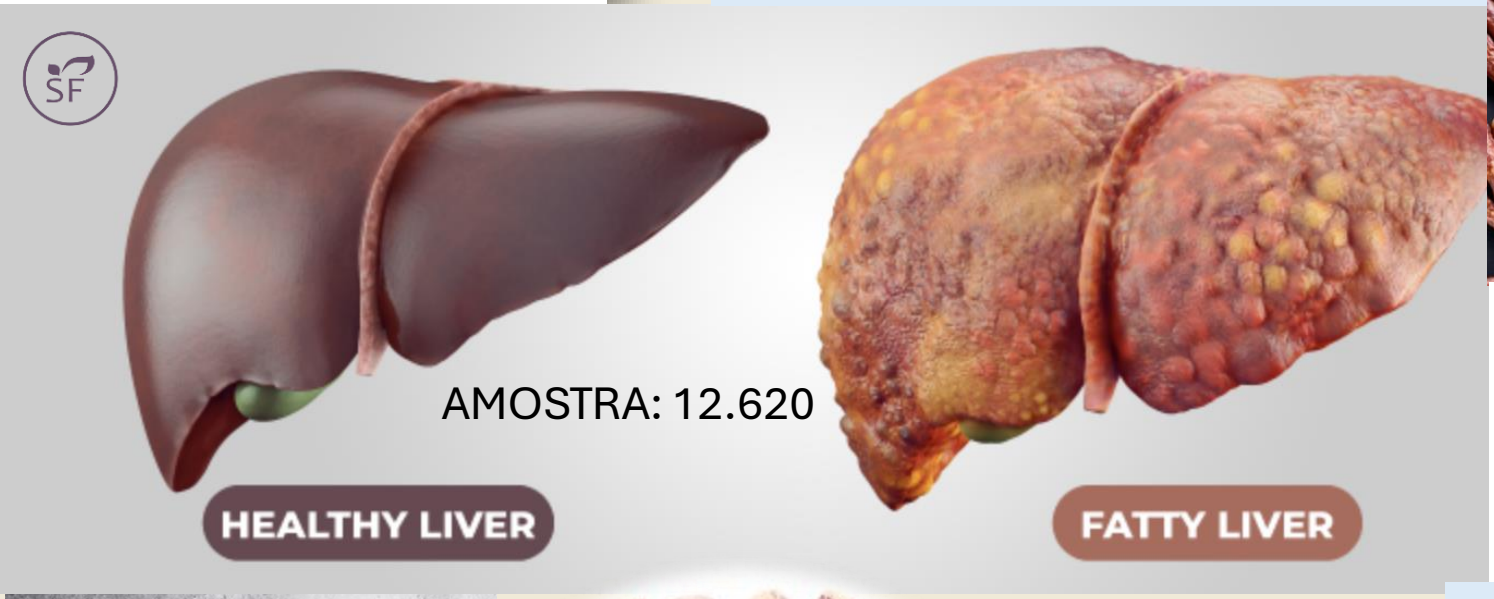
ENDOCRINE SOCIETY

Chen S, Pang J, Huang R, You Y, Zhang H, Xue H, Chen X. Associations of Macronutrients Intake With MRI-determined Hepatic Fat Content, Hepatic Fibroinflammation, and NAFLD. J Clin Endocrinol Metab. 2023 Nov 17;108(12):e1660-e1669. doi: 10.1210/clinem/dgad346. PMID: 37290038.

JOURNAL ARTICLE

Associations of Macronutrients Intake With MRI-determined Hepatic Fat Content, Hepatic Fibroinflammation, and NAFLD

AGS associada ao ↑ da esteatose, fibroinflamação e prevalência da DHGM



Maior ingestão de fibras associada a ↓ esteatose e fibroinflamação

Maior ingestão de amido e açúcar associada a ↑ fibroinflamação

Maior ingestão de MUFA associada a ↓ fibroinflamação

Maior ingestão de proteínas associada a ↓ esteatose e fibroinflamação

Remover

Reparar

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EASL | JOURNAL OF HEPATOLOGY

High red and processed meat consumption is associated with non-alcoholic fatty liver disease and insulin resistance

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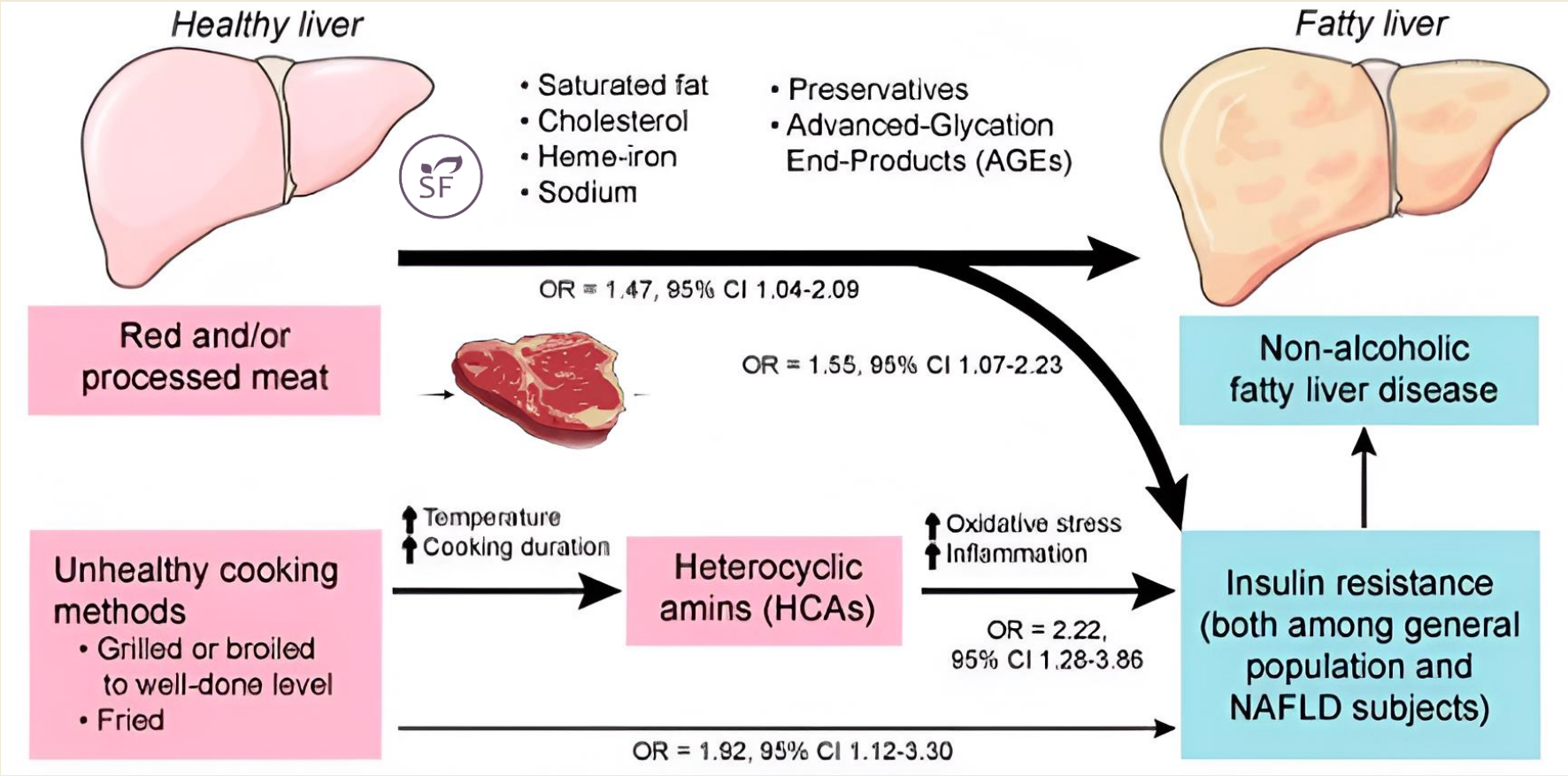


Carne Total:
- ↑ 49% nas chances de DHGM (porções/dia acima da mediana)
- ↑ 63% nas chances de RI

Carne Vermelha e/ou Processada:
- ↑ 47% nas chances de DHGNA
- ↑ 55% nas chances de RI

Métodos de Cozimento Não Saudáveis:
- ↑ 92% nas chances de RI

Aminas Heterocíclicas (HCAs):
- ↑ 122% nas chances de RI

Zelber-Sagi S, Ivancovsky-Wajcman D, Fliss Isakov N, Webb M, Orenstein D, Shibolet O, Kariv R. High red and processed meat consumption is associated with non-alcoholic fatty liver disease and insulin resistance. J Hepatol. 2018 Jun;68(6):1239-1246. doi: 10.1016/j.jhep.2018.01.015. Epub 2018 Mar 20. PMID: 29571924.

Hindawi
Oxidative Medicine and Cellular Longevity
Volume 2022, Article ID 6908934, 19 pages
https://doi.org/10.1155/2022/6908934

Research Article

Differential Effects of Dietary White Meat and Red Meat on NAFLD Progression by Modulating Gut Microbiota and Metabolites in Rats

Reparar

Carne Branca (carpa e frango):
•A dieta baseada em carpa mostrou melhorias significativas nas alterações patológicas hepáticas e no metabolismo glicolipídico.
•A dieta baseada em frango mostrou melhorias parciais nos parâmetros metabólicos.
•Observou-se enriquecimento de bactérias benéficas como *Lactobacillus* ou *Akkermansia*, aumento de AGCC s e redução de bactérias patogênicas.

Remover

Carne Vermelha (porco e boi):
•Progressão da DHGNA foi observada nos grupos alimentados com carne de porco e boi.
•Encontradas mudanças na microbiota que incluíam o enriquecimento de bactérias patogênicas (como *Prevotella_9* ou *Lachnospiraceae_UCG-010*), e redução de AGCC

@silviaferolla

British Journal of Nutrition

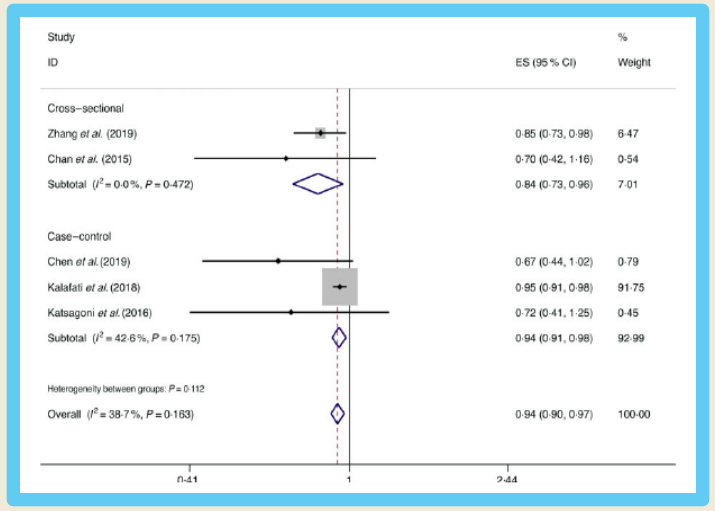
He K, Li Y, Guo X, Zhong L, Tang S. Food groups and the likelihood of non-alcoholic fatty liver disease: a systematic review and meta-analysis. Br J Nutr. 2020 Jul 14;124(1):1-13. doi: 10.1017/S0007114520000914. Epub 2020 Mar 6. PMID: 32138796; PMCID: PMC7512147.

Food groups and the likelihood of non-alcoholic fatty liver disease: a systematic review and meta-analysis

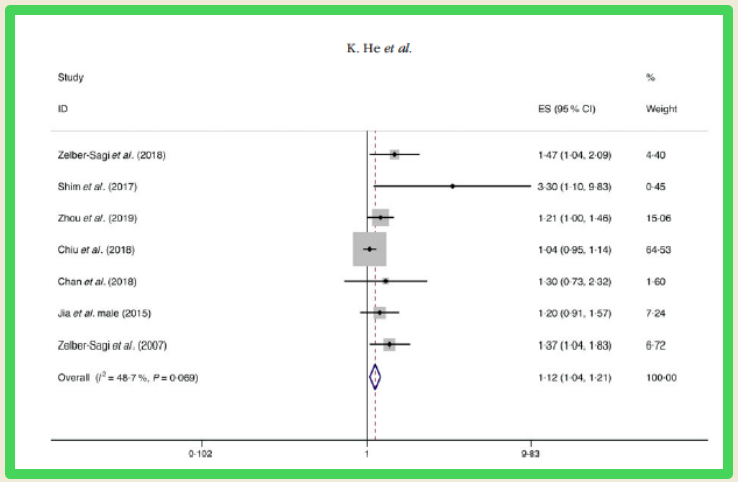
Reparar

Remover

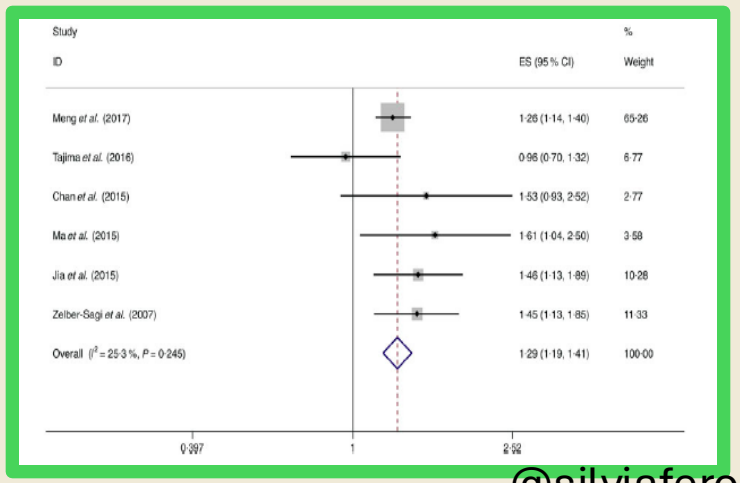
Consumo de oleaginosas e o risco de DHGNA



Consumo de carne vermelha e o risco de DHGNA



Consumo de refrigerante e o risco de DHGNA



Guidance statements:

23. There are currently no FDA-approved medications for the treatment of NAFLD, but drugs approved to treat associated comorbidities with potential benefit in NAFLD may be considered in the appropriate clinical setting.

24. Semaglutide can be considered for its approved indications (T2DM/obesity) in patients with NASH, as it confers a cardiovascular benefit and improves NASH.

25. Pioglitazone improves NASH and can be considered for patients with NASH in the context of patients with T2DM .

26. Vitamin E can be considered in select individuals as it improves NASH in some patients without diabetes.

27. Available data on semaglutide, pioglitazone, and vitamin E do not demonstrate an antifibrotic benefit, and none has been carefully studied in patients with cirrhosis.

HEPATOLOGY

Received: 18 January 2023 | Accepted: 18 January 2023

DOI: 10.1097/HEP.0000000000000323

PRACTICE GUIDANCE

AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease

Mary E. Rinella[1] | Brent A. Neuschwander-Tetri[2] | Mohammad Shadab Siddiqui[3] | Manal F. Abdelmalek[4] | Stephen Caldwell[5] | Diana Barb[6] | David E. Kleiner[7] | Rohit Loomba[8]

Reparar

Rinella ME, Neuschwander-Tetri BA, Siddiqui MS, Abdelmalek MF, Caldwell S, Barb D, Kleiner DE, Loomba R. AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease. Hepatology. 2023 May 1;77(5):1797-1835. doi: 10.1097/HEP.0000000000000323. Epub 2023 Mar 17. PMID: 36727674; PMCID: PMC10735173.

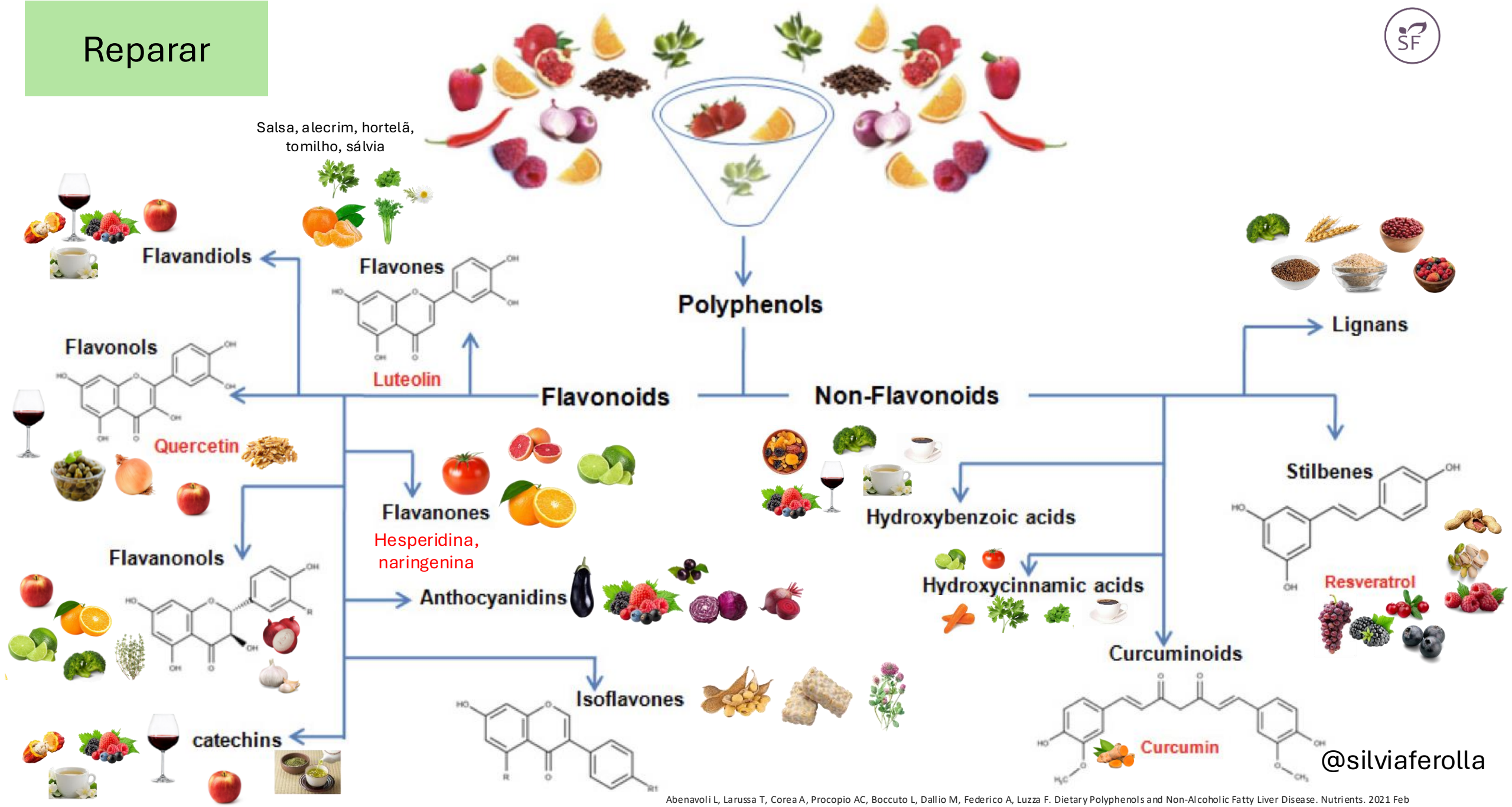
Reparar

ALIMENTOS FONTES DE VITAMINA E

800 UI de vitamina E equivalem a 536 mg.
UL para adultos de vitamina E é de 1.000 mg por dia
RDA para vitamina E em adultos é de 15 mg por dia (ou 22,4 UI) de alfa-tocoferol

Institute of Medicine (US) Panel on Dietary Antioxidants and Related Compounds. Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids. Washington (DC): National Academies Press (US); 2000. The National Academies Press. ISBN: 0-309-06949-1

Reparar



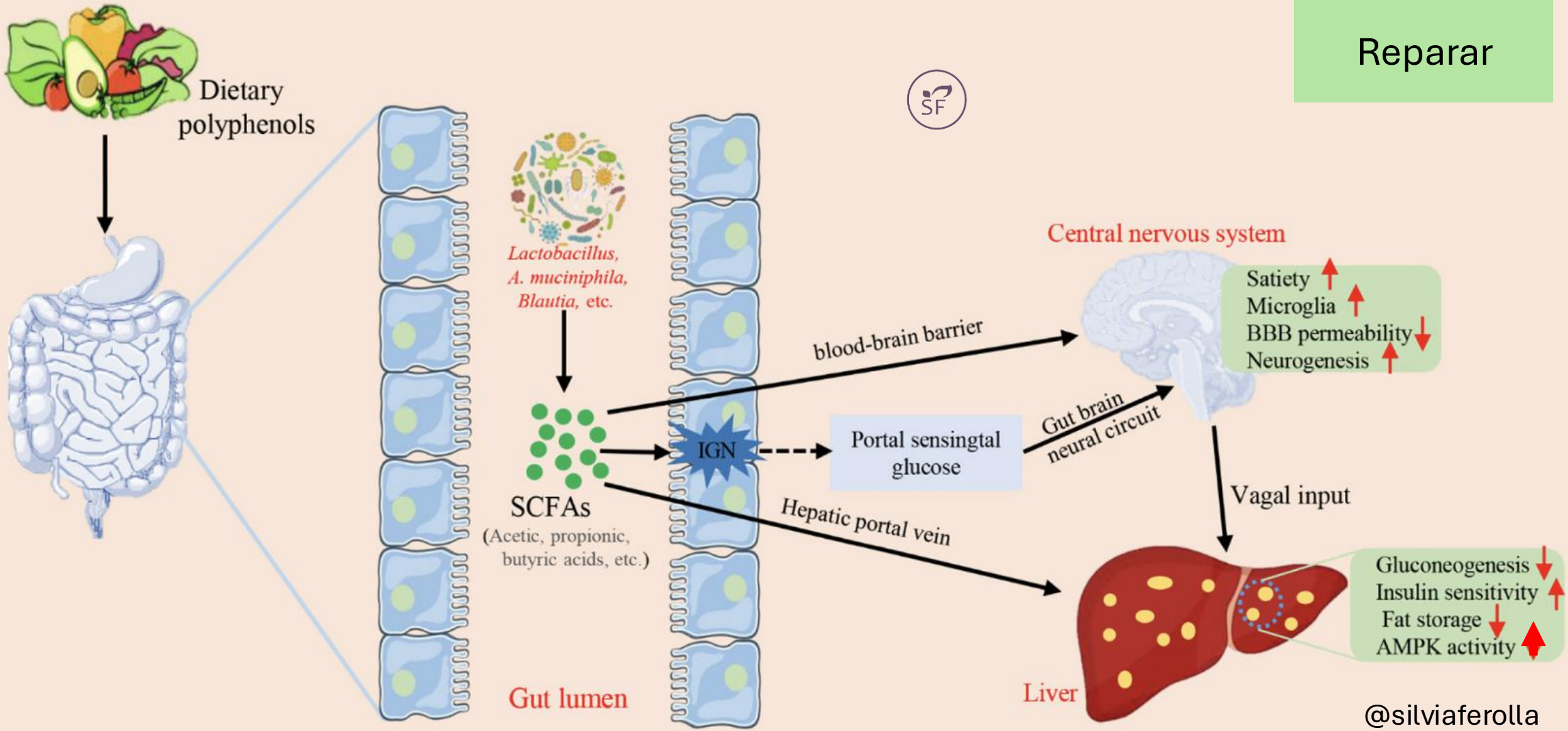
Abenavoli L, Larussa T, Corea A, Procopio AC, Boccuto L, Dallio M, Federico A, Luzza F. Dietary Polyphenols and Non-Alcoholic Fatty Liver Disease. Nutrients. 2021 Feb

pubs.acs.org/JAFC Review

Dietary Polyphenols to Combat Nonalcoholic Fatty Liver Disease via the Gut–Brain–Liver Axis: A Review of Possible Mechanisms

Wang Z, Zeng M, Wang Z, Qin F, Chen J, He Z. Dietary Polyphenols to Combat Nonalcoholic Fatty Liver Disease via the Gut-Brain-Liver Axis: A Review of Possible Mechanisms. J Agric Food Chem. 2021 Mar 31;69(12):3585-3600. doi: 10.1021/acs.jafc.1c00751. Epub 2021 Mar 17. PMID: 33729777.

Reparar



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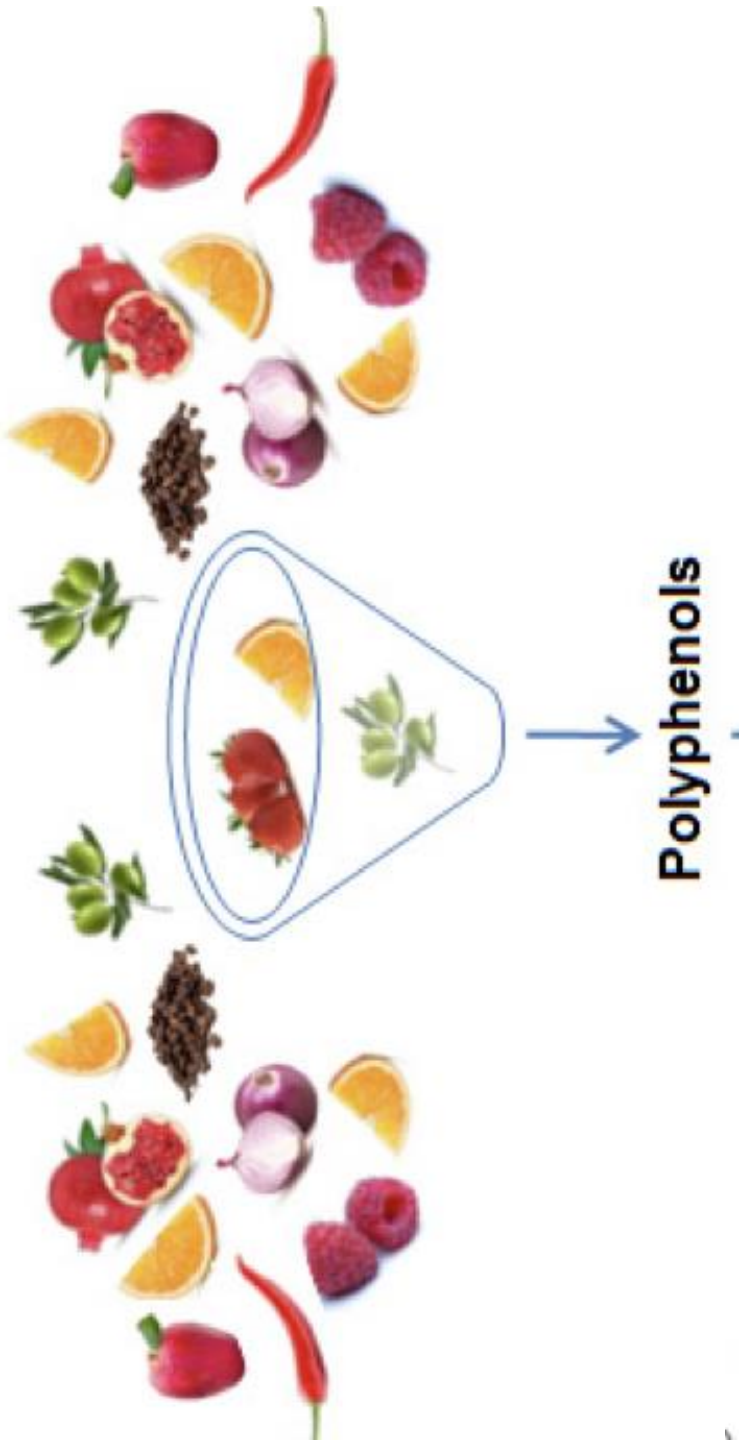


Polyphenols

↑ Proteção AO / Nrf2/CAT/ GSH
↑ oxidação de AG
↑ AMPK e PGC1-alfa
↑ Expressão de termogeninas (UCP=2)
↓ RI e peroxidação lipídica
↓ citocinas pró-inflamatórias
↓ NFK-B
↓ TLR-4
↓ acúmulo TG, col
↓ EROS

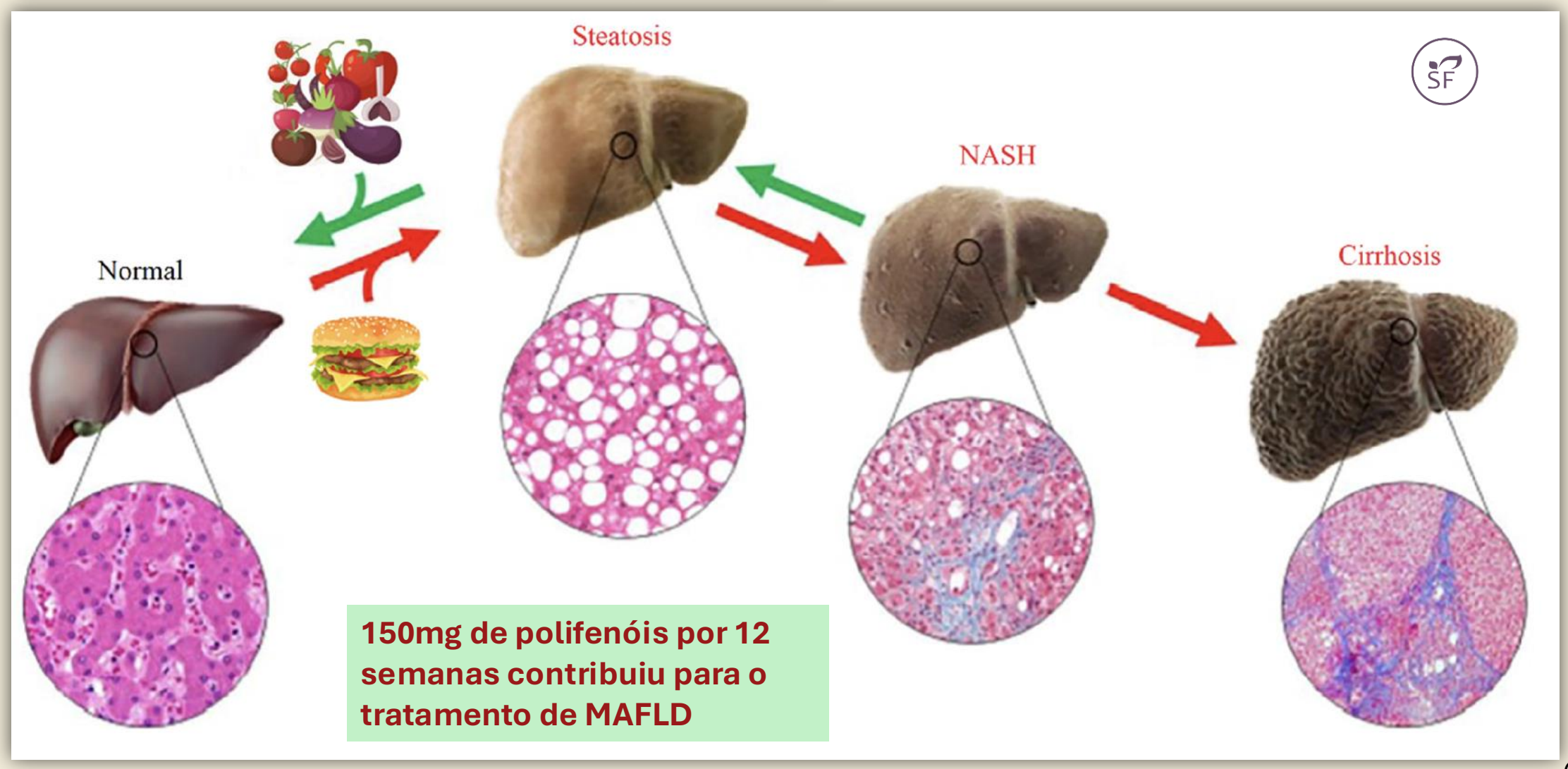
Reparar

Abenavoli L, Larussa T, Corea A, Procopio AC, Boccuto L, Dallio M, Federico A, Luzza F. Dietary Polyphenols and Non-Alcoholic Fatty Liver Disease. Nutrients. 2021 Feb 3;13(2):494. doi: 10.3390/nu13020494. PMID: 33546130; PMCID: PMC7913263.

pubs.acs.org/JAFC Review

Dietary Polyphenols to Combat Nonalcoholic Fatty Liver Disease via the Gut–Brain–Liver Axis: A Review of Possible Mechanisms

Reparar



150mg de polifenóis por 12 semanas contribuiu para o tratamento de MAFLD

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Nikkhah-Bodaghi M, Ghanavati M, Hekmatdoost A. Polyphenol intakes and risk of impaired lipid profile, elevated hepatic enzymes and nonalcoholic fatty liver disease. Nutr Food Sci. 2019. doi:10.1108/nfs-12-2018-0338.

Wang Z, Zeng M, Wang Z, Qin F, Chen J, He Z. Dietary Polyphenols to Combat Nonalcoholic Fatty Liver Disease via the Gut-Brain-Liver Axis: A Review of Possible Mechanisms. J Agric Food Chem. 2021 Mar 31;69(12):3585-3600. doi: 10.1021/acs.jafc.1c00751. Epub 2021 Mar 17. PMID: 33729777.

CONTEÚDO DE POLIFENÓIS DOS ALIMENTOS

Maçã (com casca - 100g): 136 mg de polifenóis

Framboesas (100g): 215 mg de polifenóis

Morangos (100g): 235 mg de polifenóis

240ml de Café: Entre 200 e 550 mg de polifenóis

30g de Nozes: 150 mg de polifenóis

30g de Chocolate Amargo (70-85% cacau): 499.2 mg de polifenóis

Azeitonas Pretas (100g): 569 mg de polifenóis

Mirtilos (100g): 560 mg de polifenóis

30g de Cacau em Pó: 1034.4 mg de polifenóis

http://phenol-explorer.eu

Received: 18 January 2023 | Accepted: 18 January 2023
DOI: 10.1097/HEP.0000000000000323

PRACTICE GUIDANCE

AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease

Reparar

Guidance statements:

20. Patients with NAFLD who are overweight or obese should be prescribed a diet that leads to a caloric deficit. When possible, diets with limited carbohydrates and saturated fat and enriched with high fiber and unsaturated fats (e.g., Mediterranean diet) should be encouraged due to their additional cardiovascular benefits.

21. Patients with NAFLD should be strongly encouraged to increase their activity level to the extent possible. Individualized prescriptive exercise recommendations may increase sustainability and have benefits independent of weight loss.

Key points:

- *Weight loss improves hepatic steatosis, NASH, and hepatic fibrosis in a dose-dependent manner.*
- *The necessary support to manage comorbid disease and foster the adoption of liver protective health behaviors is best achieved using a multidisciplinary approach.*
- *Coffee consumption (caffeinated or not) of at least 3 cups daily is associated with less advanced liver disease.*

ADIPOCYTE
2018, VOL. 7, NO. 3, 218–225
https://doi.org/10.1080/21623945.2018.1474669

Taylor & Francis
Taylor & Francis Group

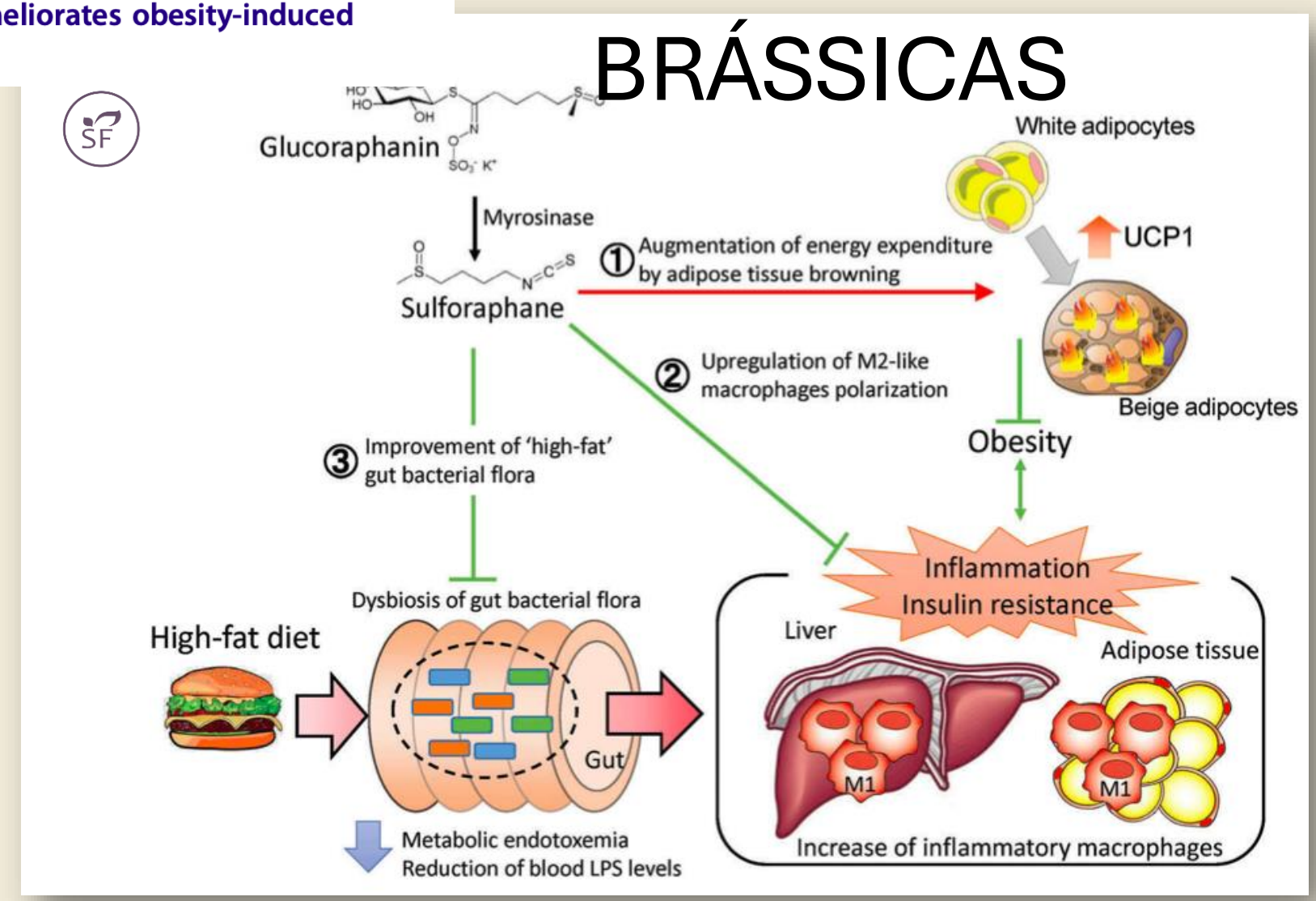
COMMENTARY

Glucoraphanin: a broccoli sprout extract that ameliorates obesity-induced inflammation and insulin resistance

Reparar

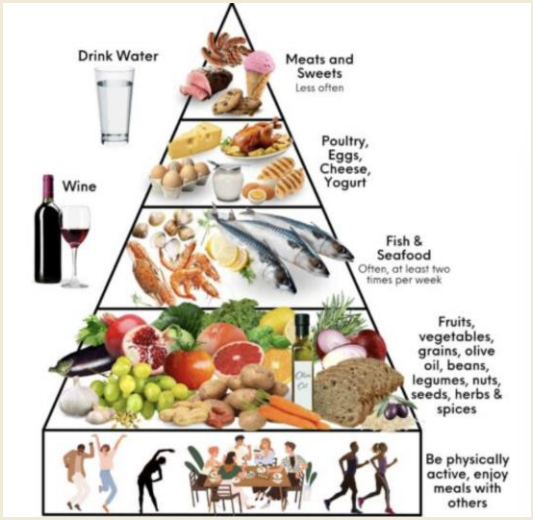
BRÁSSICAS

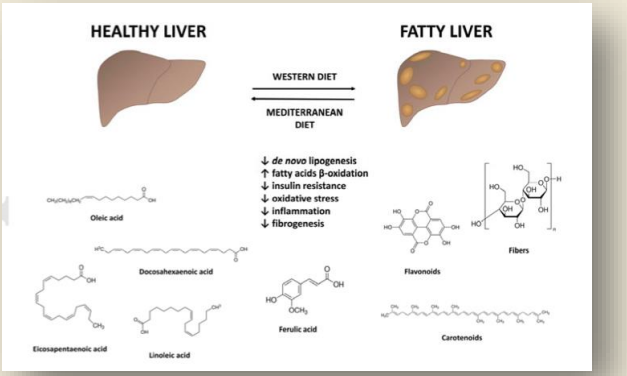
- A glucorafanina, um gliocosinolato presente nas brássicas, é transformada em **sulforafano** pela mirosinase da microbiota intestinal.
- Aumento do ”escurecimento" do tecido adiposo.
- Promove equilíbrio saudável de macrófagos no fígado e tecido adiposo branco com redução da inflamação.
- Reduz os níveis de LPS no sangue e endotoxemia metabólica.



Reparar

Dieta mediterrânea





nutrients Nutrients **2023**, *15*, 2250. https://doi.org/10.3390/nu15102250

Review

Does the Mediterranean Diet Have Any Effect on Lipid Profile, Central Obesity and Liver Enzymes in Non-Alcoholic Fatty Liver Disease (NAFLD) Subjects? A Systematic Review and Meta-Analysis of Randomized Control Trials

British Journal of Nutrition, page 1 of 9 doi:10.1017/S0007114521002270

Effect of Mediterranean diet on liver enzymes: a systematic review and meta-analysis of randomised controlled trials

Clinical Nutrition 41 (2022) 1913–1931

Contents lists available at ScienceDirect

Clinical Nutrition

journal homepage: http://www.elsevier.com/locate/clnu

Meta-analyses

The effectiveness and acceptability of Mediterranean diet and calorie restriction in non-alcoholic fatty liver disease (NAFLD): A systematic review and meta-analysis

Contents lists available at ScienceDirect

Clinical Nutrition ESPEN

journal homepage: http://www.clinicalnutritionespen.com

Original article

Effects of the Mediterranean diet on cardiovascular risk factors in non-alcoholic fatty liver disease patients: A systematic review and meta-analysis

Clin Nutr ESPEN. 2020 Jun;37:148-156. doi: 10.1016/j.clnesp.2020.03.003.

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nutrients

MDPI

Review

Nutritional Approaches for the Management of Nonalcoholic Fatty Liver Disease: An Evidence-Based Review

Reparar

AASLD	Déficit calórico 500-1000 kcal Perda de peso de pelo menos 3%-5% melhorar a esteatose Maior perda de peso (7%-10%) é necessária para melhorar a maioria das características histopatológicas da NASH, incluindo fibrose
EASL	Déficit calórico 500-1000 kcal Perda de peso de 500 a 1000g/ semana 7 a 10% perda de peso total Baixa a moderada ingestão de gordura e em carboidrato Evitar bebidas e alimentos processados contendo frutose
APASL	Déficit calórico 500-1000 kcal Contra indica dieta muito baixa em caloria

Parra-Vargas M, Rodriguez-Echevarria R, Jimenez-Chillaron JC. Nutritional Approaches for the Management of Nonalcoholic Fatty Liver Disease: An Evidence-Based Review. Nutrients. 2020 Dec 17;12(12):3860. doi: 10.3390/nu12123860. PMID: 33348700; PMCID: PMC7766941.

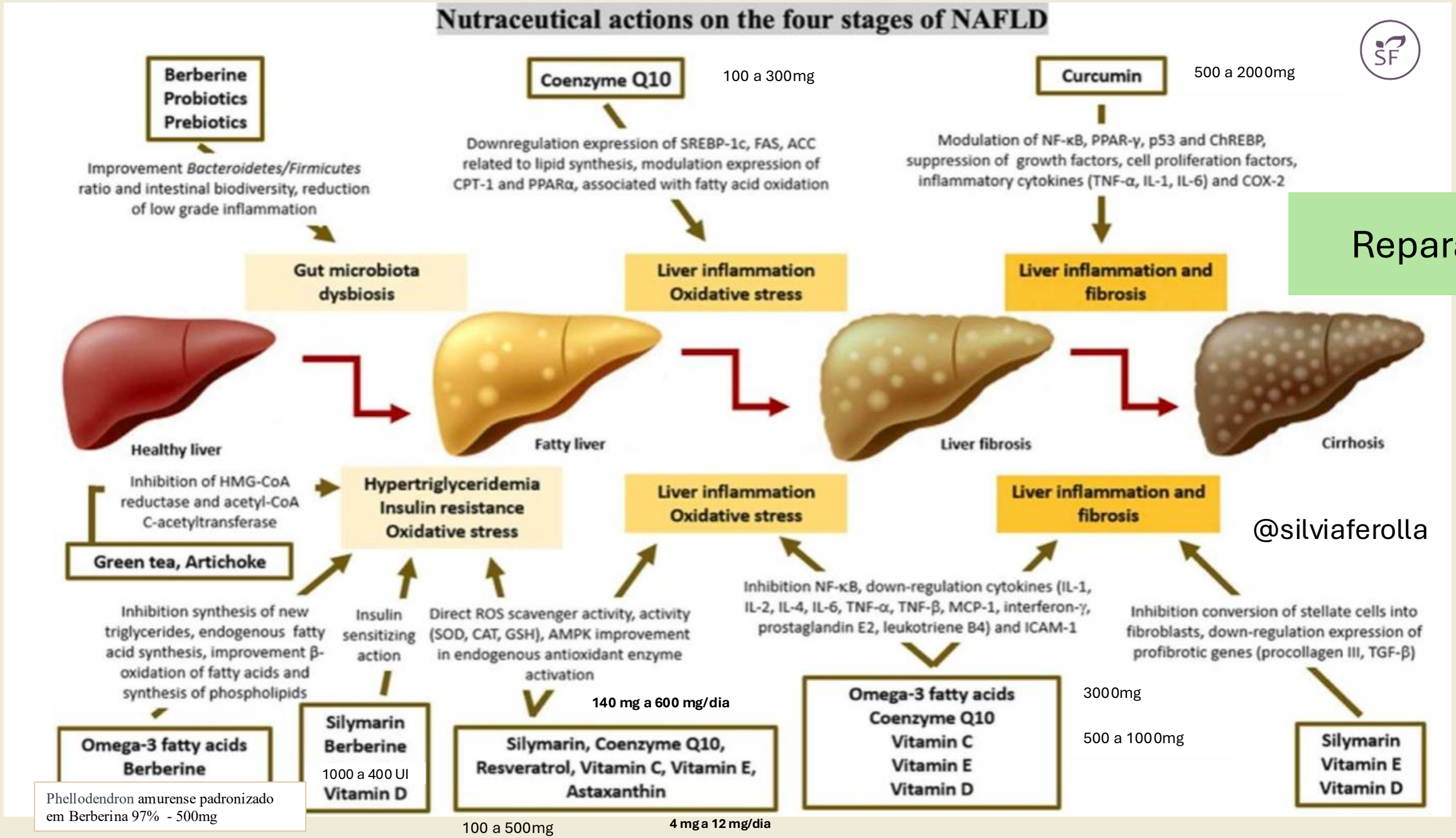
World Journal of Gastroenterology

Current guidelines for the management of non-alcoholic fatty liver disease: A systematic review with comparative analysis

Reparar

Leoni S, Tovoli F, Napoli L, Serio I, Ferri S, Bolondi L. Current guidelines for the management of non-alcoholic fatty liver disease: A systematic review with comparative analysis. World J Gastroenterol. 2018 Aug 14;24(30):3361-3373. doi: 10.3748/wjg.v24.i30.3361. PMID: 30122876; PMCID: PMC6092580.

AASLD	Atividade aeróbica e treinamento de resistência mais de 150 min por semana
EASL	Atividade aeróbica e treinamento de resistência 150 a 200 min por semana em 3 a 5 sessões
Asia-pacific	Atividade aeróbica e treinamento de resistência



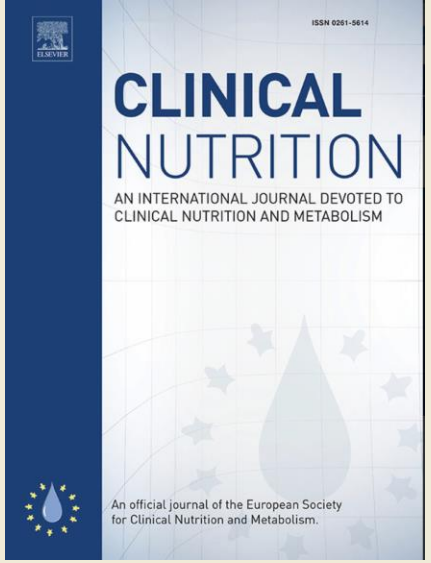
Phellodendron amurense padronizado em Berberina 97% - 500mg

Rizzo M, Colletti A, Penson PE, Katsiki N, Mikhailidis DP, Toth PP, Gouni-Berthold I, Mancini J, Marais D, Moriarty P, Ruscica M, Sahebkar A, Vinereanu D, Cicero AFG, Banach M; International Lipid Expert Panel (ILEP). Nutraceutical approaches to non-alcoholic fatty liver disease (NAFLD): A position paper from the International Lipid Expert Panel (ILEP). Pharmacol Res. 2023 Mar;189:106679. doi: 10.1016/j.phrs.2023.106679. Epub 2023 Feb 8. PMID: 36764041.

CLINICAL NUTRITION

META-ANALYSES | VOLUME 43, ISSUE 6, P1224-1239, JUNE 2024

Optimal probiotic combinations for treating nonalcoholic fatty liver disease: A systematic review and network meta-analysis



Background

Probiotic administration is a promising therapy for improving conditions in NAFLD patients. This network meta-analysis aimed to compare and estimate the relative effects of probiotic interventions and identify the optimal probiotic species for the treatment of NAFLD (Nonalcoholic fatty liver disease) patients.

Methods

The PubMed, Web of Science, Embase, and Cochrane databases were searched from inception to 29 January 2024 to identify RCTs that were published in English. The GRADE framework was used to assess the quality of evidence contributing to each network estimate.

Results

A total of 35 RCTs involving 2212 NAFLD patients were included in the analysis. For primary outcomes, *Lactobacillus* + *Bifidobacterium* + *Streptococcus* exhibited the highest probability of being the finest probiotic combination in terms of enhancing acceptability as well as reducing AST (SMD: −1.95 95% CI: −2.90, −0.99), ALT (SMD = −1.67, 95% CI: −2.48, −0.85), and GGT levels (SMD = −2.17, 95% CI: −3.27, −1.06). In terms of the secondary outcomes, *Lactobacillus* + *Bifidobacterium* + *Streptococcus* was also the best probiotic combination for reducing BMI (SMD = −0.45, 95% CI: −0.86, −0.04), LDL levels (SMD = −0.45, 95% CI: −0.87, −0.02), TC levels (SMD = −1.09, 95% CI: −1.89, −0.29), and TNF-α levels (SMD = −1.73, 95% CI: −2.72, −0.74).

Conclusion

This network meta-analysis revealed that *Lactobacillus* + *Bifidobacterium* + *Streptococcus* may be the most effective probiotic combination for the treatment of liver enzymes, lipid profiles, and inflammation factors. These findings can be used to guide the development of a probiotics-based treatment guideline for NAFLD since there are few direct comparisons between different therapies.

Reinocular

- 35 ECRs com 2212 pacientes com DHGNA.
- Lactobacillus + Bifidobacterium + Streptococcus mostrou-se a melhor combinação probiótica.
- **AST**: Redução significativa com DME de -1,95 (IC 95%: -2,90 a -0,99).
- **ALT**: Redução significativa com DME de -1,67 (IC 95%: -2,48 a -0,85).
- **GGT**: Redução significativa com DME de -2,17 (IC 95%: -3,27 a -1,06).
- **IMC**: Leve redução com DME de -0,45 (IC 95%: -0,86 a -0,04).
- **LDL**: Leve redução com DME de -0,45 (IC 95%: -0,87 a -0,02).
- **CT (Colesterol Total)**: Redução com DME de -1,09 (IC 95%: -1,89 a -0,29).
- **TNF-α**: Redução significativa com DME de -1,73 (IC 95%: -2,72 a -0,74).

Conclusão : Lactobacillus + Bifidobacterium + Streptococcus pode ser a combinação mais eficaz para tratar enzimas hepáticas, perfis lipídicos e fatores inflamatórios em pacientes com DHGNA.

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Reinocular

- *L. acidophilus*
- *L. bulgaricus*
- *B. breve*
- *B. lactis*
- *S. thermophilus*
- *L. plantarum*
- *L. paracasei*
- *L. rhamnosus*
- *L. casei*
- *B. bifidum*

PROBIÓTICO E *NASH/MASH*

MÍNIMO DE 8 SEMANAS!

Khalesi S, Johnson DW, Campbell K, Williams S, Fenning A, Saluja S, Irwin C. Effect of probiotics and synbiotics consumption on serum concentrations of liver function test enzymes: a systematic review and meta-analysis. Eur J Nutr. 2018 Sep;57(6):2037-2053. doi:

> Eur J Gastroenterol Hepatol. 2021 Aug 1;33(8):1104-1109.
doi: 10.1097/MEG.0000000000001920.

Obstructive sleep apnea and severity of nonalcoholic fatty liver disease

Reequilibrar

SONO

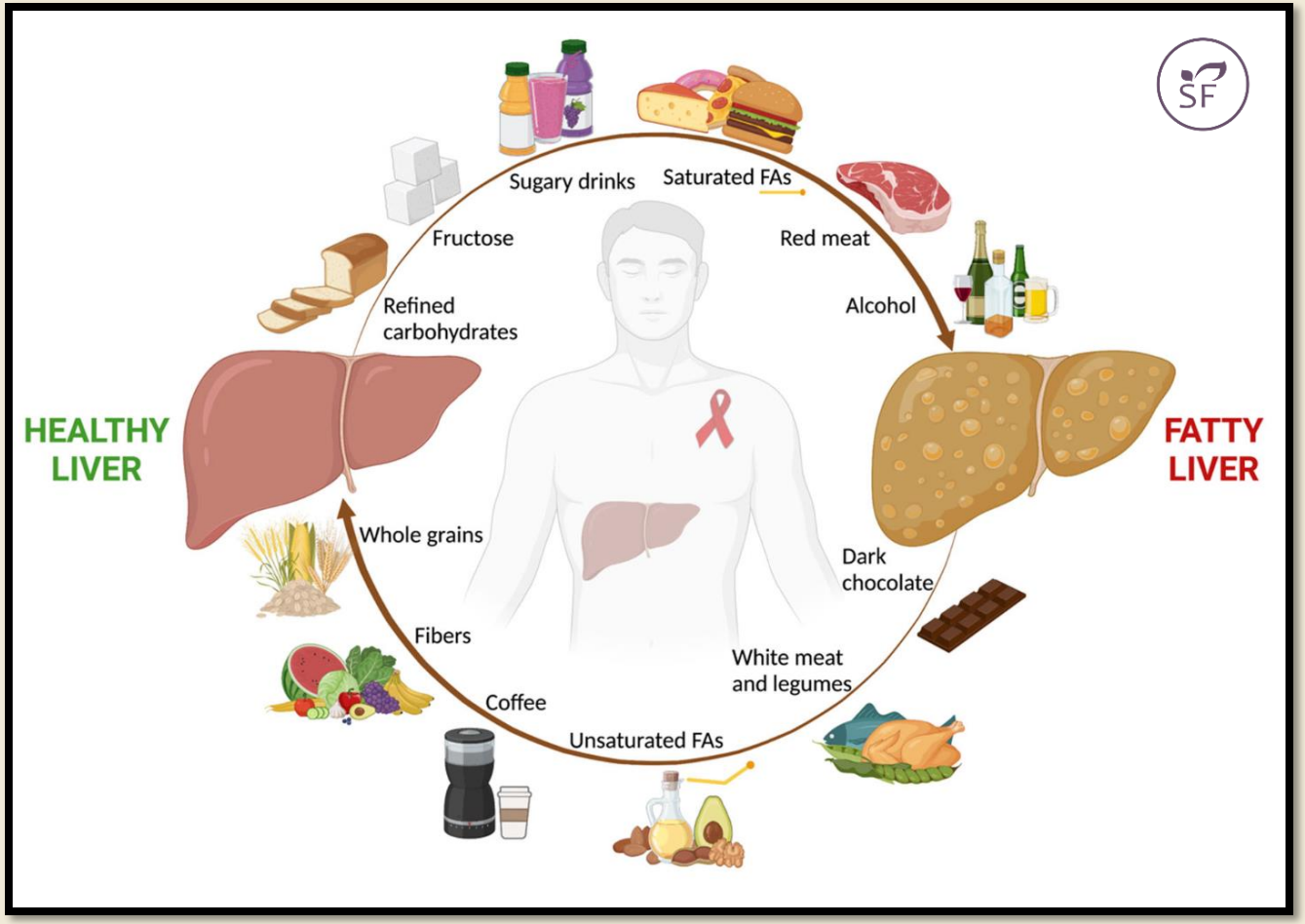
Results: Fifty-one patients were evaluated, 80.4% had systemic arterial hypertension (SAH), 68.6% type 2 diabetes mellitus, 62.7% dyslipidemia and 96.1% MS. Regarding the histological evaluation (n = 48), all had steatosis, 95.8% steatohepatitis and 83.3% fibrosis. In polysomnography, 80.4% were group 1 and 19.6% group 2. In univariate analysis, no correlation was found between steatosis severity, NASH and presence or severity of fibrosis with OSA. A multivariate analysis adjusted for obesity level, found that patients with moderate to severe OSA had an increased risk of hepatic fibrosis (odds ratio 1.22, 95% confidence interval: 1.02-1.45, P = 0.027).

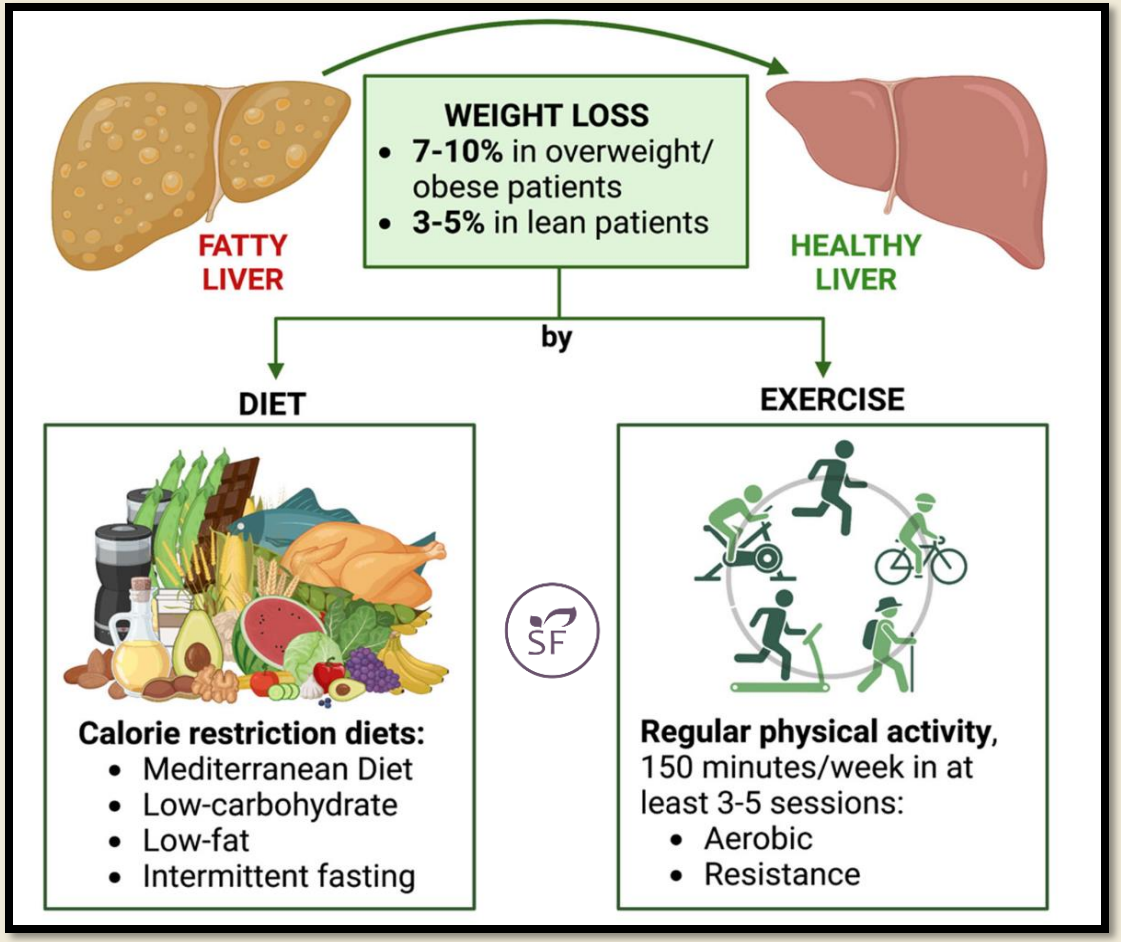
Conclusion: The present study demonstrated an association between fibrosis and moderate to severe OSA, regardless of obesity.

n=51
Na análise multivariada ajustada por obesidade, foi verificado que pacientes com apneia do sono moderada a grave apresentavam risco aumentado de fibrose hepática (OR: 1.22)

HIPÓXIA INTERMITENTE - ALTERA NÍVEIS DE EIXO HPA-CORTISOL E AUMENTA RI!

Reavaliar SEMPRE!





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Cinque F, Cespiati A, Lombardi R, Guaraldi G, Sebastiani G. Nutritional and Lifestyle Therapy for NAFLD in People with HIV. Nutrients. 2023 Apr

CONGRESSO INTERNACIONAL NUTRIÇÃO INTEGRATIVA
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www.dietafodmap.com.br

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