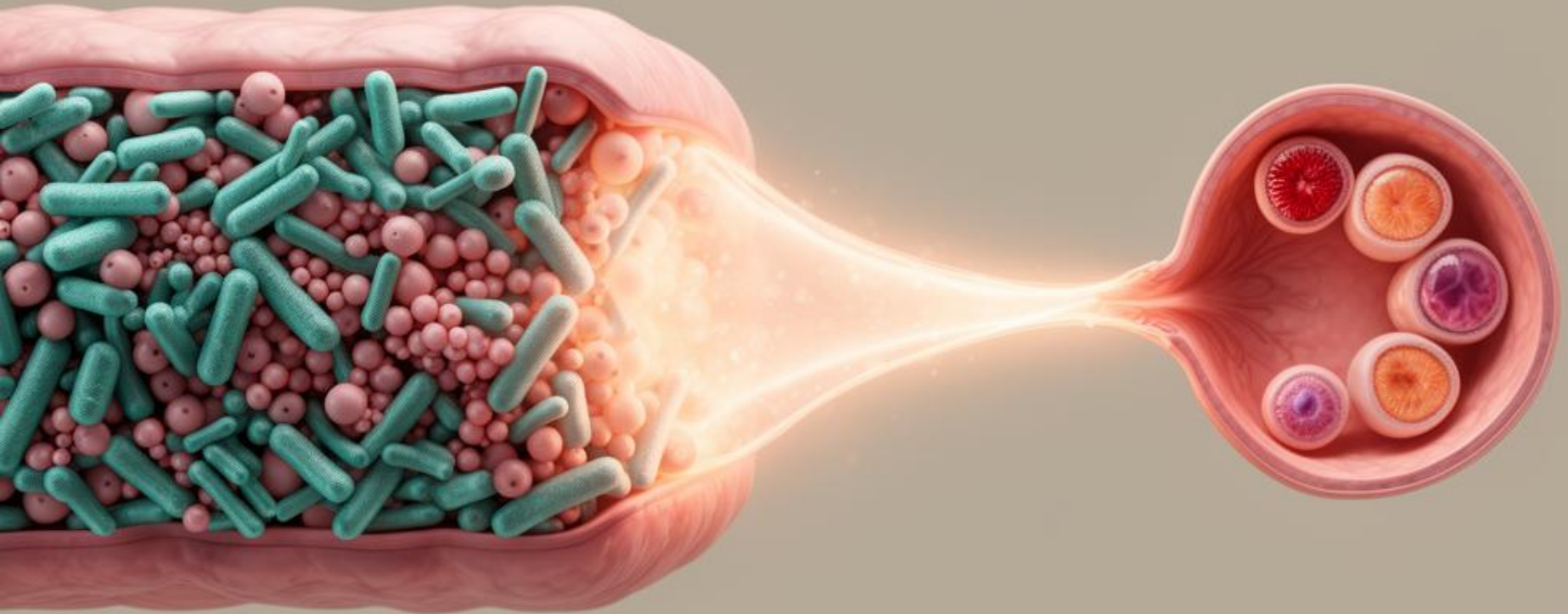
Gut Microbiota in Menopausal Transition



Prof. Zdravko Kamenov, MD, PhD, DMSc, FECSM, FACE

Clinic of Endocrinology, University Hospital "Alexandrovska"

Medical University-Sofia, Bulgaria

CoI

Lectures and scientific boars for Actavis, Astra Zeneca, Bayer-Schering, Berlin Chemie, Boehringer Ingelheim, Elli Lily, KRKA, Merck, MLD, MSD, Mundipharma, Mylan, Novartis, Novo Nordisk, Pfizer, Sandoz, Sanofi Aventis, Servier, TEVA, Valentis, Vedra, Viatris.

This presentation is supported by Vedra International

The agenda

1. Back into the years - All diseases begin in the gut
2. The menopause consequences
3. Bidirectional link gut microbiota – sex hormones
4. Probiotics in menopausal medicine
5. Vedra: helping menopausal women

World Civilizations Timeline



Ancient Mesopotamia
3550



Ancient India
2500



Ancient Israel
1100



Roman Empire
650



Medieval Europe 1000





European World Empires
1700



Mayan Civilization
225 CE



Ottoman Empire
1300

3300 2900 2300 1500 900 100 400 1200 1600 2000

3700 BCE

0



Ancient Egypt
3100



Ancient China
1800



Ancient Greece
800



Imperial China 300



Islamic Caliphate
900





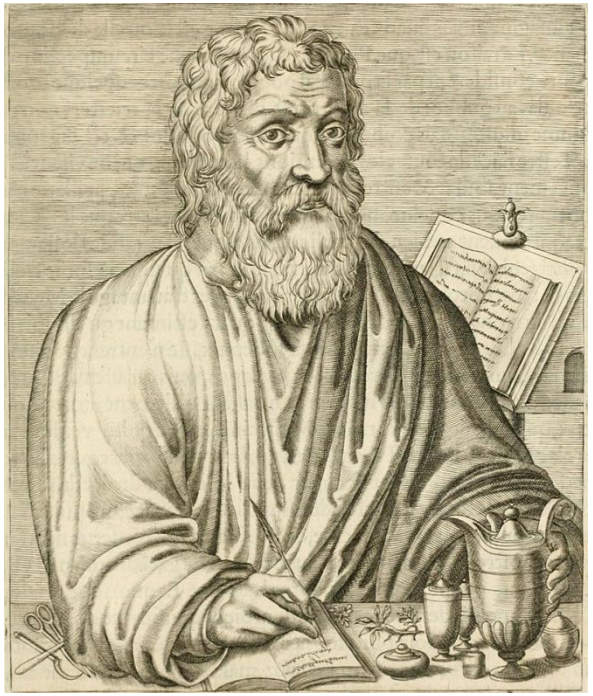
Japanese Civilization
250



Obesity&
Diabetes&
Old people
Civilization

Lecture under the tree

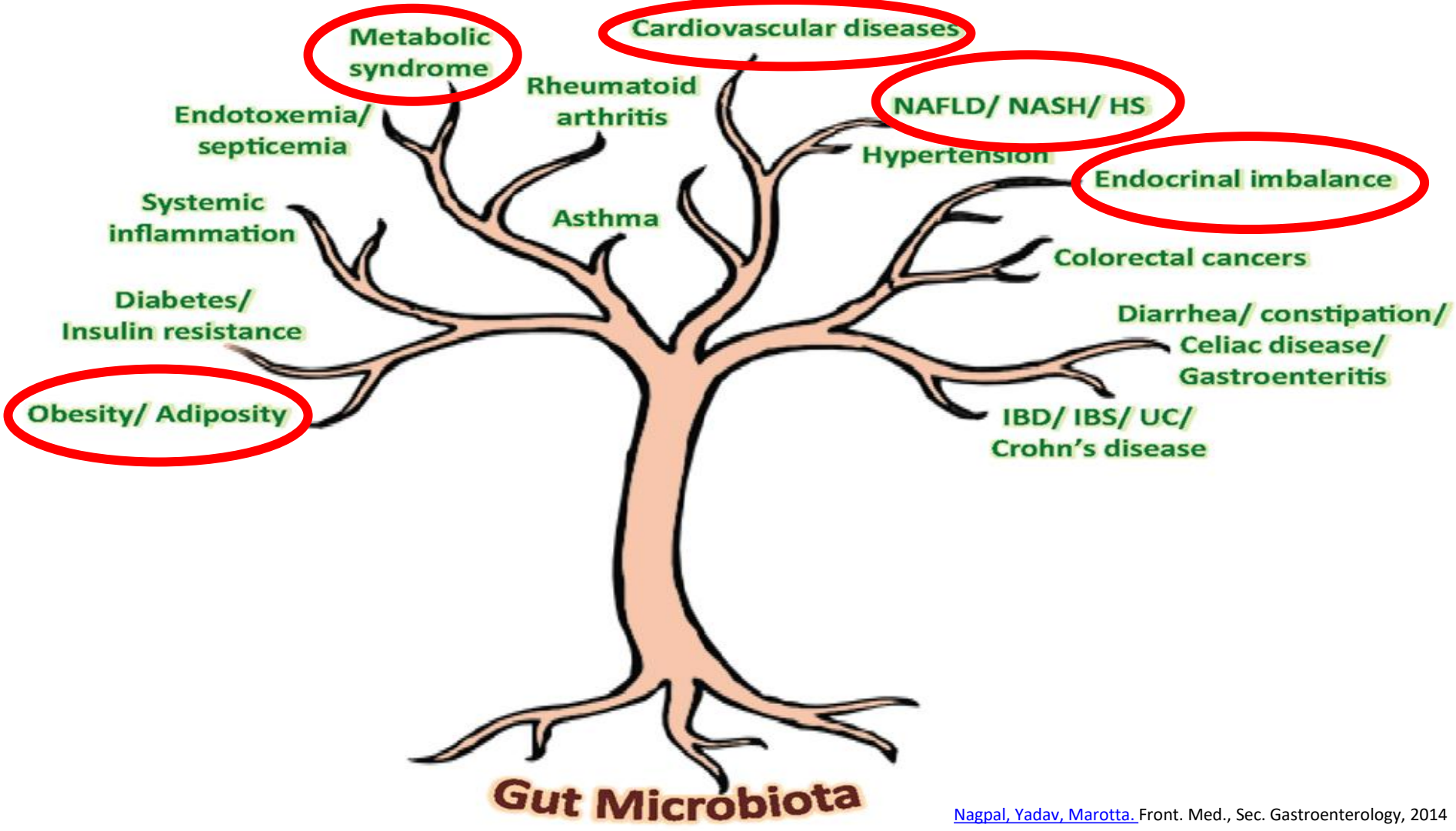




Hippocrates (460-370 BC)

„Sudden death is more common in those who are naturally fat than thin “

„All diseases begin in the gut “



Nagpal, Yadav, Marotta. Front. Med., Sec. Gastroenterology, 2014

Menopause Data Hub

Global verified 2026-06-16

47M

women enter menopause each year worldwide

Source: International Menopause Society, 2023

Global verified 2026-06-16

~15%

of menopause cases globally are surgical

Source: Lancet Women, 2022

Global verified 2026-06-16

~1%

of women experience premature menopause (under 40)

Source: ESHRE, 2023

Data updated continuously via PubMed + ClinicalTrials + FDA · Last updated: Oct 18, 2026, 9:00 AM

1.2B

women in menopause globally by 2030

51

average age of natural menopause onset

<10%

of eligible women receive hormone therapy

3-6 months

average wait for a menopause specialist in the US

Kindr Health. (2026). Menopause Statistics and Global Data Hub. kindr.health/menopause-statistics

Copy citation

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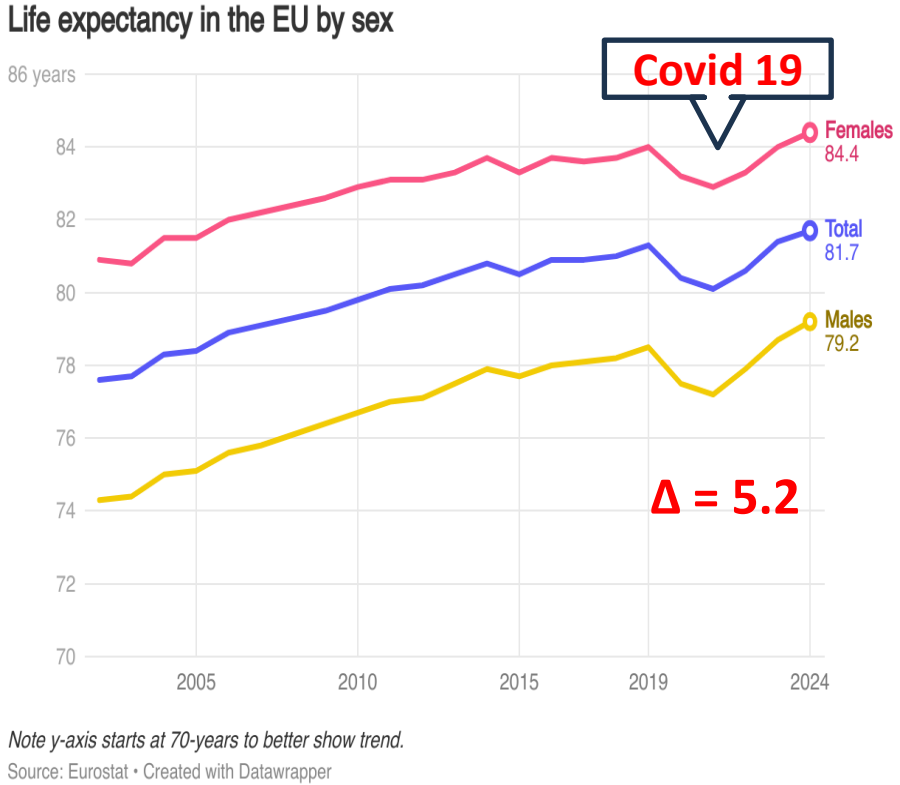
Periods in woman's life





The menopause transition, **a portal to the second half of life**, is a critical window to reassess lifestyle, recognize ongoing and potential health concerns, and encourage a proactive approach to future well-being, regardless of menopausal symptoms.

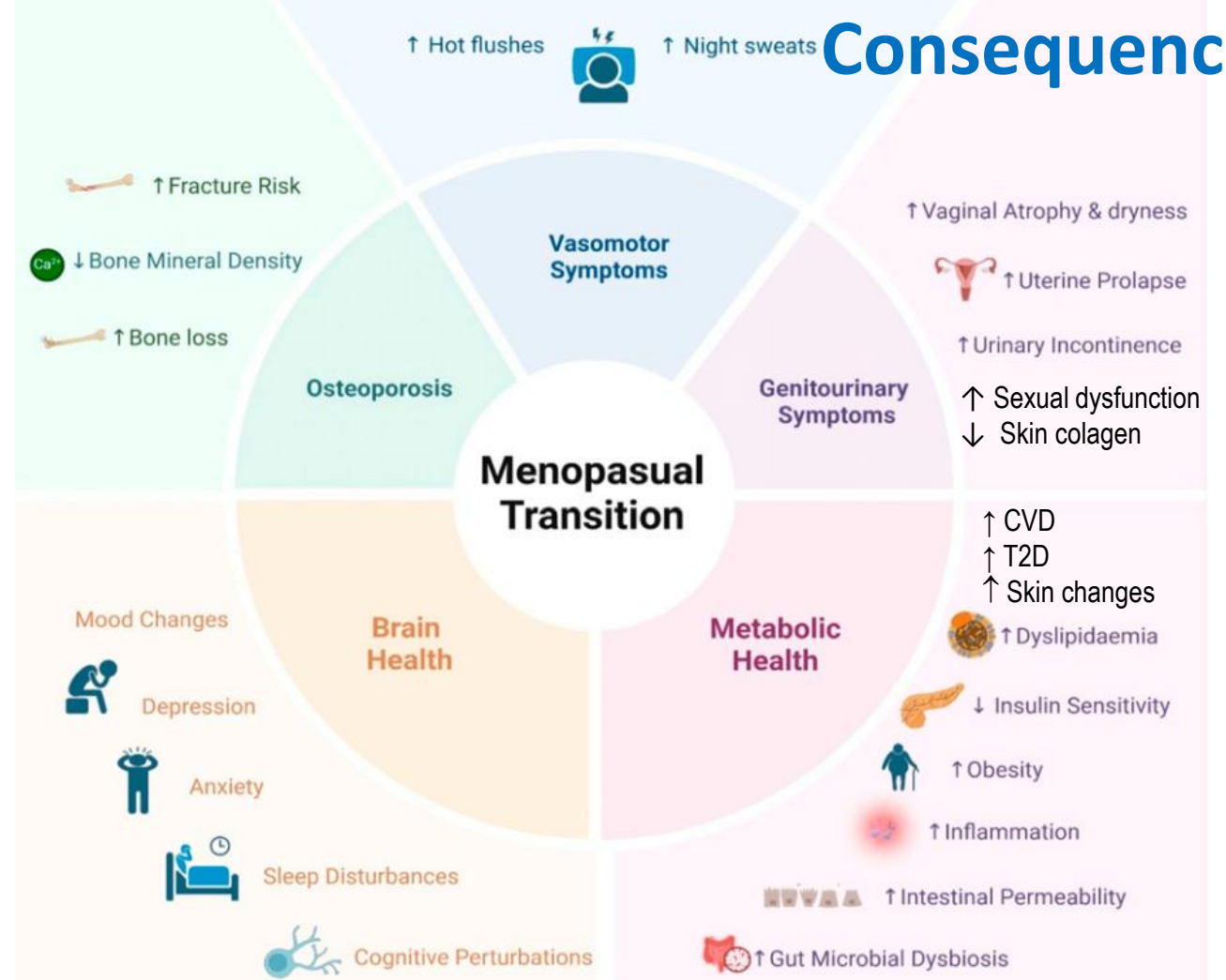
ES Guideline on Menopause. JCEM 2015



0 18 51 84

Conclusion – there will be many (more) postmenopausal women in the future

Consequences of menopause



modif. Liaquat M. et al. Post Reproductive Health 2025, Vol. 31(2) 105–114

Menopausal syndrome (MPS) is diagnosed by clinical manifestations including

(1) menstrual disorders;

(2) VMSs primarily hot flushes;

(3) one or more additional symptoms such as a mental disorder, urogenital atrophy, cardiovascular symptoms, skin and body changes and osteoporosis; along with

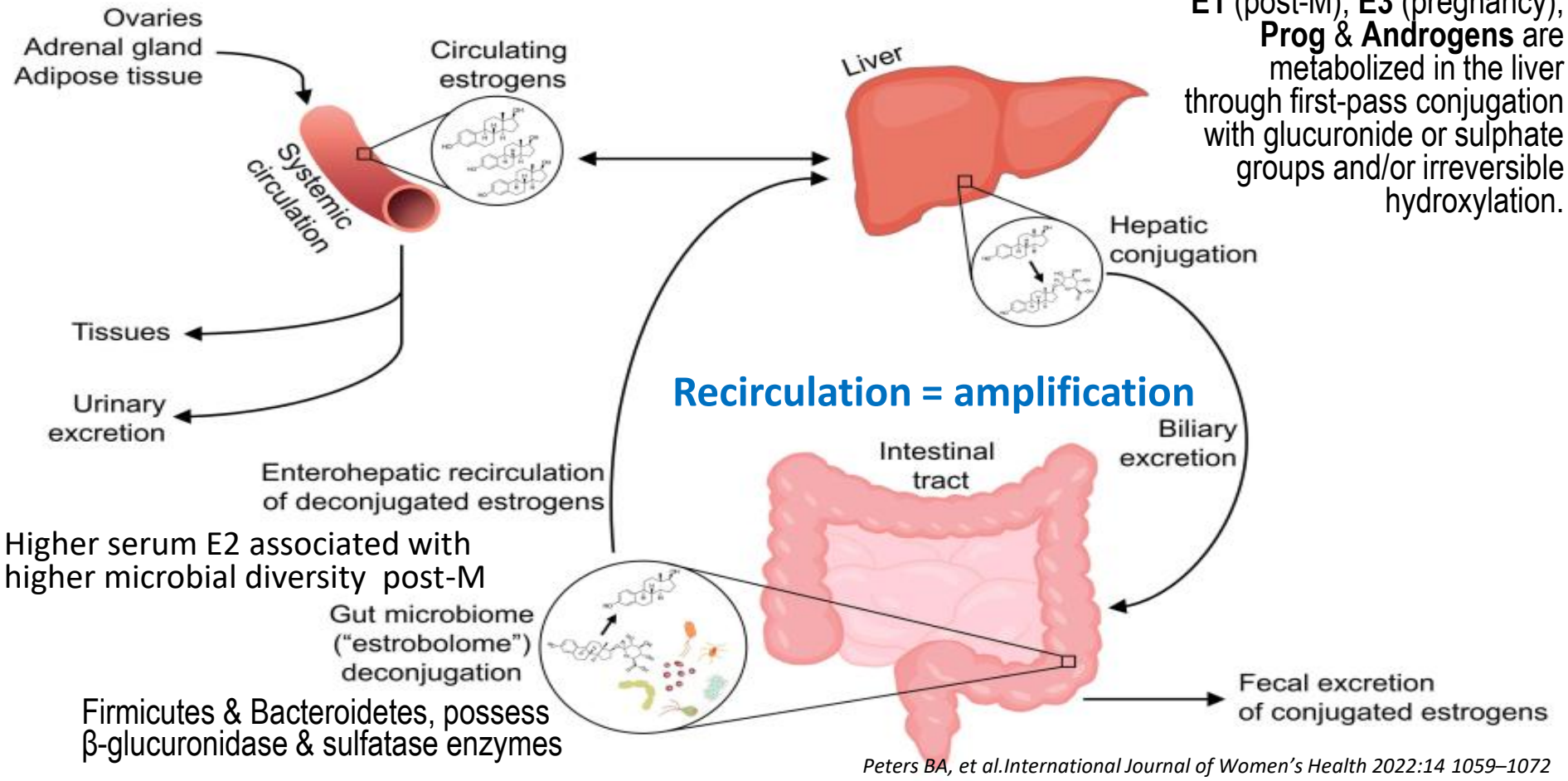
(4) M-related hormonal changes.

These individuals exhibited an enrichment of metabolic pathways associated with cardiovascular disease and carbohydrate metabolism, suggesting a **higher risk of developing cardiovascular disease, obesity, diabetes, and other related conditions.**


The sex hormones ↔ gut link

How gut microbiota affects hormones?

E2 (predominant in pre-M), **E1** (post-M), **E3** (pregnancy), **Prog** & **Androgens** are metabolized in the liver through first-pass conjugation with glucuronide or sulphate groups and/or irreversible hydroxylation.

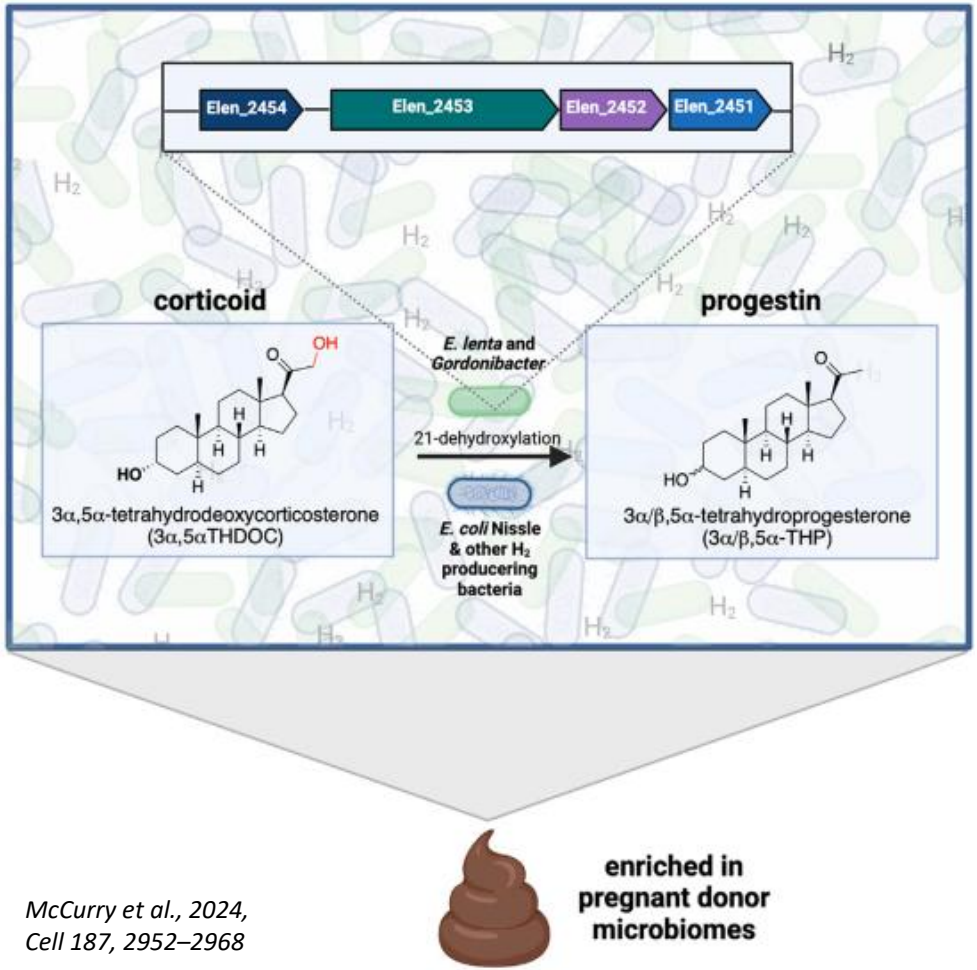


Higher serum E2 associated with higher microbial diversity post-M

Firmicutes & Bacteroidetes, possess β-glucuronidase & sulfatase enzymes

Peters BA, et al.International Journal of Women's Health 2022:14 1059–1072

De novo synthesis of sex hormones



McCurry et al., 2024, Cell 187, 2952–2968

- **Gordonibacter and Eggerthella 21-dehydroxylate host corticoids to produce progestins - the regulatory neurosteroid allopregnanolone.** This chemical transformation human cells do not perform in this way. Allopregnanolone (brexanolone) is approved by the FDA for postpartum depression. Allopregnanolone and its precursors decline in the menopausal transition, and mood and sleep disturbance are among the most troublesome midlife symptoms
- **Bacterial production of hydrogen gas promotes 21-dihydroxylation.** This is cooperative metabolism: one group of bacteria produces H_2, which enables a second group to run the steroid conversion. It also means dietary fibre intake could, in principle, influence neurosteroid output
- **The 21-dehydroxylation genes were identified** using comparative and functional genomics
- **Progestin levels and gene cluster abundance were significantly higher during pregnancy**

How sex hormones affect gut microbiota?

- **Rodent studies** - gut bacterial diversity is observed to be similar across males and females **prior to puberty,** with differences only becoming clear among post-pubescent animals.
- **Castrated male** littermates possess a microbiota more like that of a female microbiota.
- E and P improve barrier function of intestinal epithelial cells by upregulating the tight junction proteins. In mouse model, **ovariectomy** has been shown to increase intestinal permeability.
- **In humans** observations in **pregnant women** have revealed profound effects on the gut microbiota, especially during the third trimester when the estrogen levels are at their peak. **Menopause** associated sex hormones changes are also linked with **decreased gut microbial diversity** in women as the **microbiota shifts towards more male-like composition**. The hormonal fluctuations and decline associated with M have been linked to reduced gut barrier integrity and increased **microbial translocation**.
- Findings from the Study of Women's Health Across the Nation (**SWAN**) cohort indicate that **gut permeability** (as measured by fatty acid binding protein 2 [FABP2]), increases during the menopausal transition and is linked to **increased inflammation**. This increased permeability facilitates the movement of microbes and microbial products from the gut into systemic circulation, potentially triggering systemic inflammation and immune activation, which are **associated with the pathogenesis of various diseases**. M affects the gastrointestinal health as well as gut microbiota composition which potentially play an important role in M-associated symptoms.

Liaquat M. et al. Post Reproductive Health 2025, Vol. 31(2) 105–114

AMERICAN SOCIETY FOR MICROBIOLOGY | mSystems®

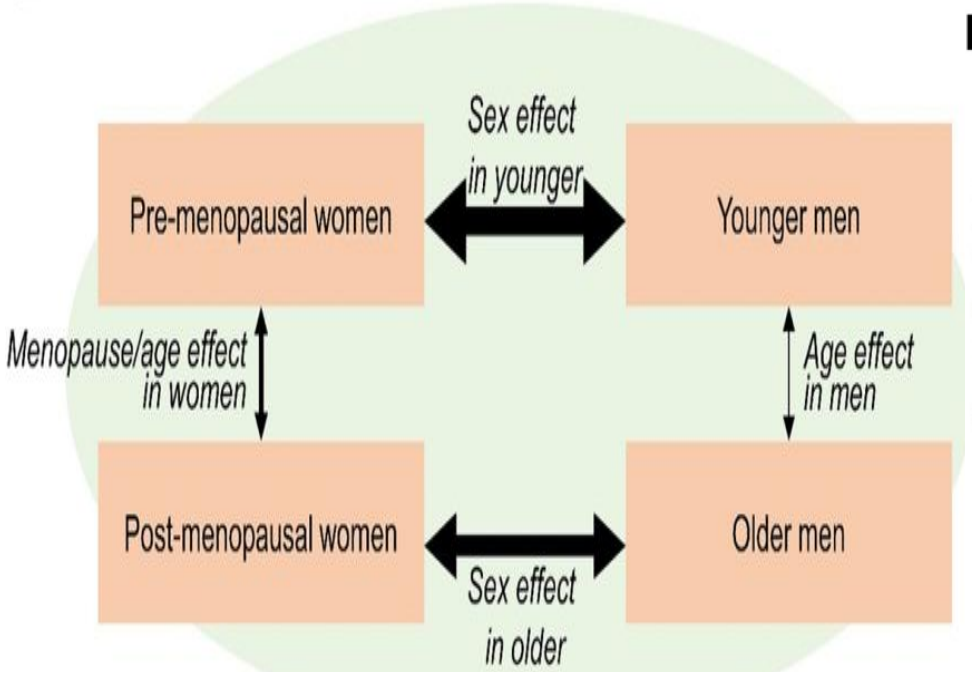
RESEARCH ARTICLE

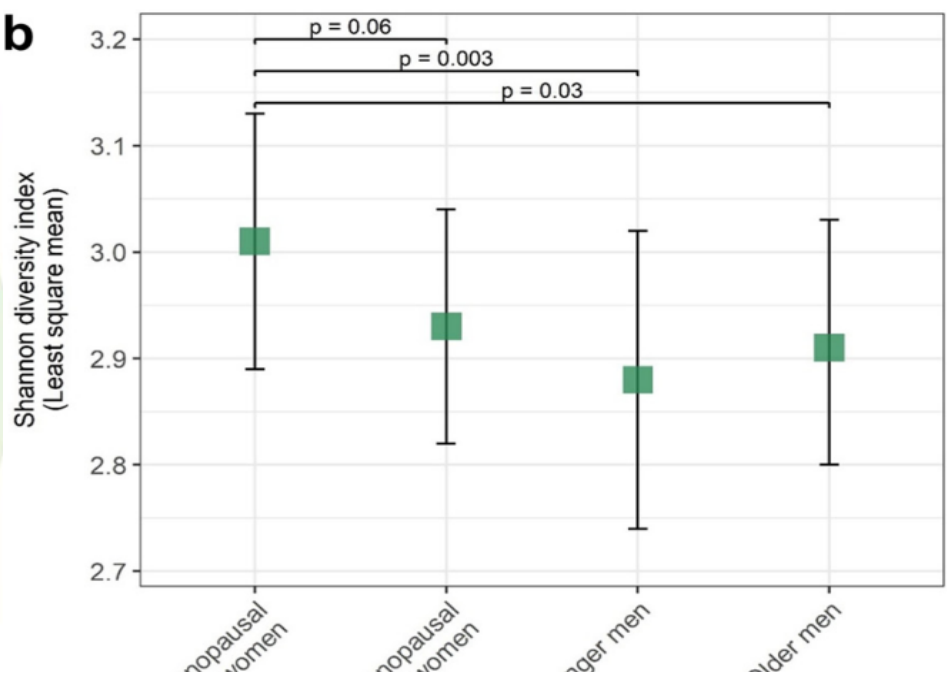
May/June 2022 Volume 7 Issue 3

Menopause Is Associated with an Altered Gut Microbiome and Estrobolome, with Implications for Adverse Cardiometabolic Risk in the Hispanic Community Health Study/Study of Latinos

Brandilyn A. Peters,[a] Juan Lin,[a] Qibin Qi,[a] Mykhaylo Usyk,[b] Carmen R. Isasi,[a] Yasmin Mossavar-Rahmani,[a] Carol A. Derby,[a] Nanette Santoro,[c] Krista M. Perreira,[d] Martha L. Daviglus,[e] Michelle A. Kominiarek,[f] Jianwen Cai,[g] Rob Knight,[h] Robert D. Burk,[a,b,i] Robert C. Kaplan[a,j]

- Population with high burden of cardiometabolic risk factors, **shotgun metagenomic sequencing** was performed on stool, and **serum metabolomics** was available on a subset from 2,300 participants
- 295 premenopausal women
- 1,027 postmenopausal women
- 978 men = younger (n = 258) and older (n = 720).

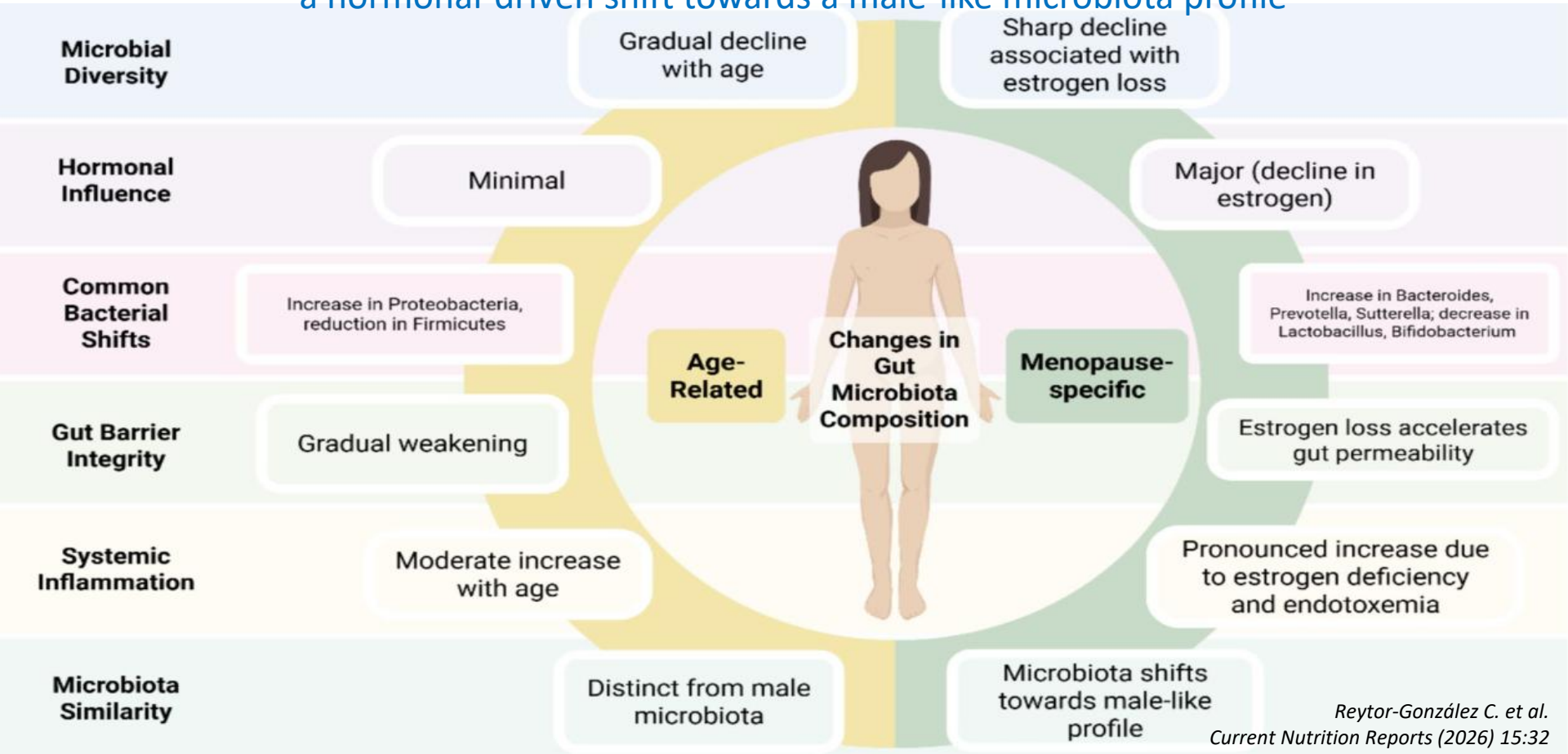




Differentially abundant taxa for post- versus preM women included *Bacteroides sp. strain Ga6A1, Prevotella marshii, and Sutterella wadsworthensis* (**enriched in postmenopause**) and *Escherichia coli-Shigella spp., Oscillibacter sp. strain KLE1745, Akkermansia muciniphila, Clostridium lactatifermentans, Parabacteroides johnsonii, and Veillonella seminalis* (**depleted in postmenopause**); these taxa similarly differed between men and women.

Distinction between age-related and menopause-specific microbiota changes

Menopause is associated with a more pronounced loss of beneficial bacteria and a hormonal-driven shift towards a male-like microbiota profile



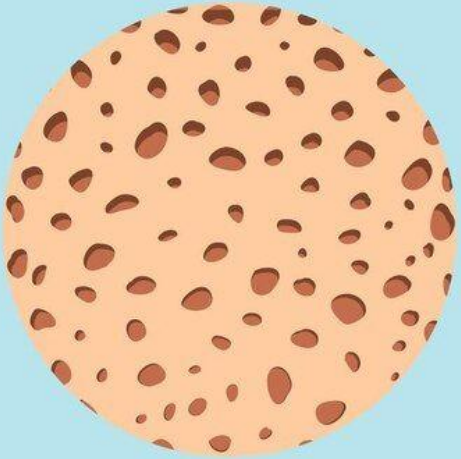
Reytor-González C. et al.
Current Nutrition Reports (2026) 15:32

Effect of probiotics during the menopause transition

FRIDAY, October 23rd 2026

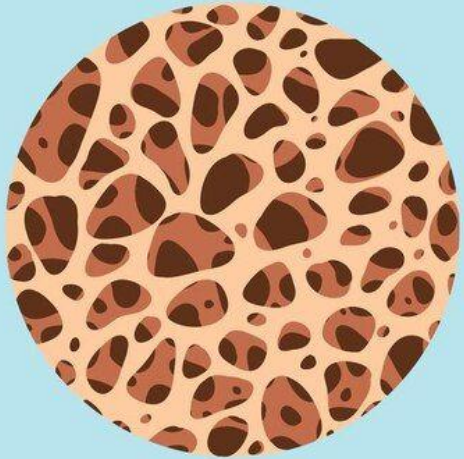
08.30 – 09.30		*Registration*
09.30 – 09.40	A. Frauwallner	**Welcome and introduction**
09.40 – 10.10	S. Fijan	**Antagonistic and Clinical Effects of Multi-Strain Probiotics**
10.10 – 10.40	G. Grande	**Microbiota and Probiotics: Impact on Semen Quality and Male Fertility**
10.40 – 11.10	K. Krekora	**Typical Vaginal Microbiota Communities and their Impact on Women's Health**
11.10 – 11.40		*Coffee break*
11.40 – 12.10	T. Thurner	**Why the Gut Heart Axis Matters- it's not only about Genes, Lifestyle plays a Key Role in Prevention**
12.10 – 12.40	Z. Kamenov	**Gut Microbiota in Menopausal Transition**
12.40 – 13.10	S. Kolleritsch	**Targeting the Gut–Skin Axis: Oral and Topical Probiotics in Pediatric Atopic Dermatitis**
13.10 – 14.10		*Lunch break*
14.10 – 14.40	P. Portincasa	**Gut and Metabolic Diseases: Opportunities of Probiotic Medicine**
14.40 – 15.10	I. Klymiuk	**Microbes Against Cancer: Probiotics and the Tumor–Microbiome Axis**
15.10 – 15.40	A. Frauwallner	**Wounds, Pain and Inflammation: Emerging Roles of Probiotics in Healing and Recovery**
15.40 – 16.00	A. Frauwallner	*Conclusio*

OSTEOPOROSIS



NORMAL BONE





OSTEOPOROSIS

BMJ Open
2021;11:e041393

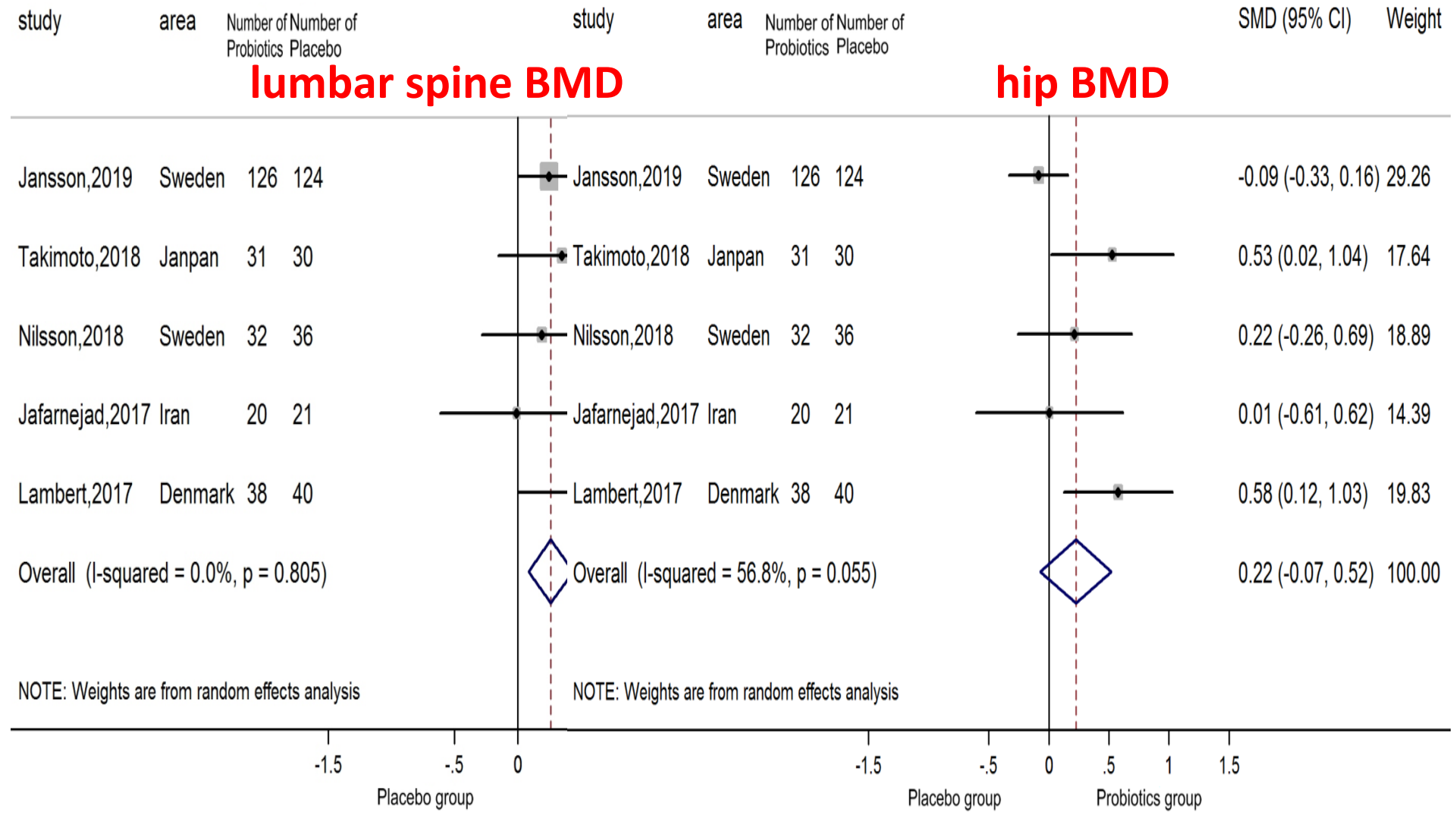
Probiotic supplements and bone health in postmenopausal women: a meta-analysis of randomised controlled trials

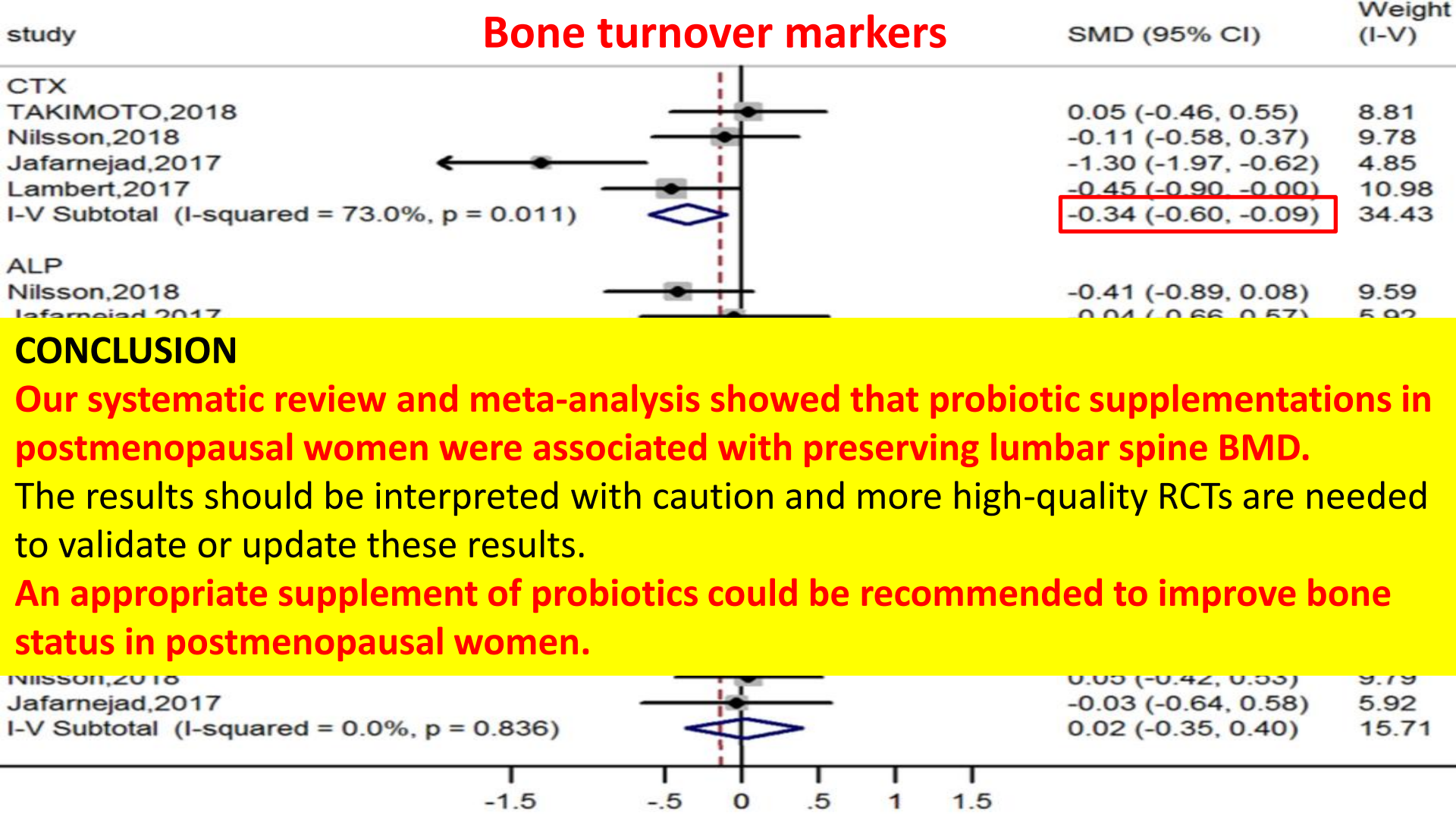
Jiawei Yu,[1] Gaoyang Cao,[2] Shuohui Yuan,[1] Cong Luo,[1] Jiafeng Yu,[1] Ming Cai [1]

Strengths and limitations of this study

- This is the first meta-analysis on the effectiveness of probiotic supplements on bone status in postmenopausal women.
- We included only high-quality randomised controlled trials to improve the level of evidence.
- The limited number of reports prevented us from conducting subgroup analysis and made it difficult to draw firm conclusions.

Objective Several studies have analysed the associations between dietary supplementation with probiotics and bone health in postM women, but the results are still controversial. We conducted this metaanalysis **to assess the effects of probiotics supplement on bone mineral density (BMD) and bone turnover markers** for postmenopausal women.
Methods -PubMed, EMBASE and the Cochrane Library to November 2020;
Five RCTs (n=497) were included.


study
area
Number of Probiotics
Number of Placebo
lumbar spine BMD
Jansson,2019 Sweden 126 124
Takimoto,2018 Janpan 31 30
Nilsson,2018 Sweden 32 36
Jafarnejad,2017 Iran 20 21
Lambert,2017 Denmark 38 40
Overall (I-squared = 0.0%, p = 0.805)
NOTE: Weights are from random effects analysis
-1.5
-.5
0
Placebo group
study
area
Number of Probiotics
Number of Placebo
hip BMD
Jansson,2019 Sweden 126 124
Takimoto,2018 Janpan 31 30
Nilsson,2018 Sweden 32 36
Jafarnejad,2017 Iran 20 21
Lambert,2017 Denmark 38 40
Overall (I-squared = 56.8%, p = 0.055)
NOTE: Weights are from random effects analysis
-1.5
-.5
0
.5
1
1.5
Placebo group
Probiotics group
SMD (95% CI)
Weight
-0.09 (-0.33, 0.16) 29.26
0.53 (0.02, 1.04) 17.64
0.22 (-0.26, 0.69) 18.89
0.01 (-0.61, 0.62) 14.39
0.58 (0.12, 1.03) 19.83
0.22 (-0.07, 0.52) 100.00



CONCLUSION

Our systematic review and meta-analysis showed that probiotic supplementations in postmenopausal women were associated with preserving lumbar spine BMD.

The results should be interpreted with caution and more high-quality RCTs are needed to validate or update these results.

An appropriate supplement of probiotics could be recommended to improve bone status in postmenopausal women.

Vasomotor and psychological symptoms



Clinical Nutrition ESPEN 69 (2025) 241–256

Contents lists available at ScienceDirect

Clinical Nutrition ESPEN

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

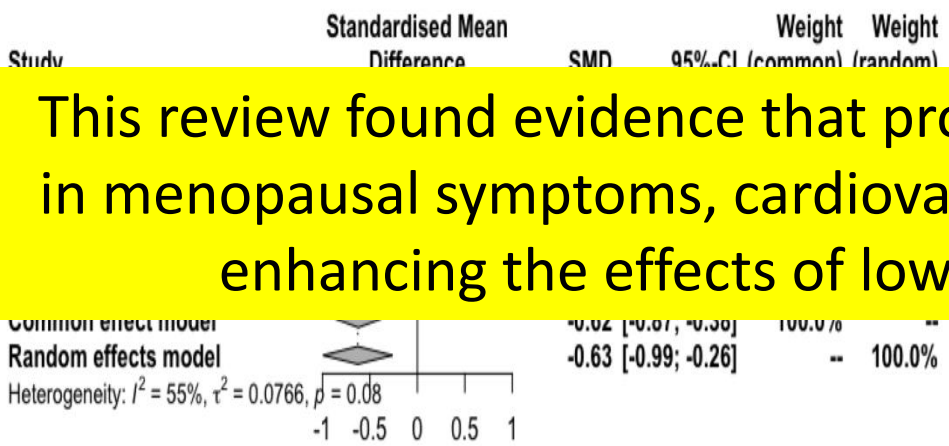
Meta-analysis

Investigating the effects of probiotics during the menopause transition: A systematic review & meta-analysis

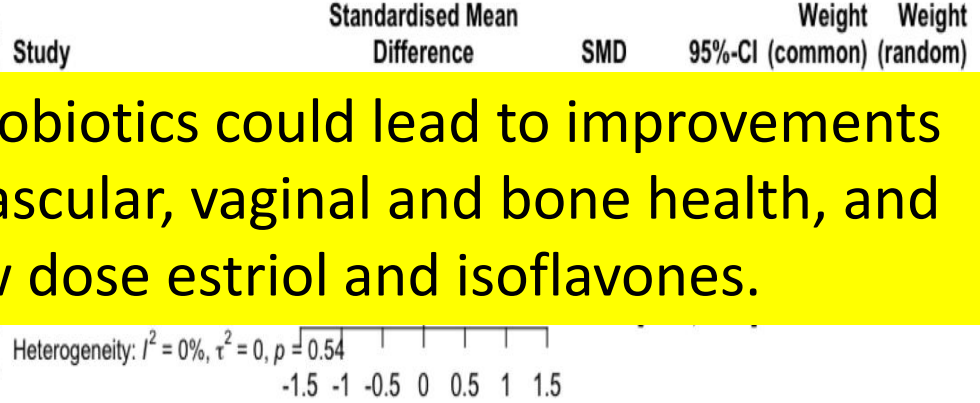
Robin A.F. Andrews [a,*], Arron Lacey [b], Helen Roach [c], Rebeccah Tomlinson [d], Emma J. Kidd [a], Kate Bache [c]

- This review investigated **the impact of probiotics during the menopause transition** and explored their **potential to enhance the effectiveness of estrogenic substances** in perimenopausal or recently postmenopausal women.
- A thorough literature search of EMBASE, MEDLINE, Cochrane Library, Scopus, and Web of Science was conducted, identifying **39 studies involving 3187 women**. Quality assessments were conducted using the relevant Cochrane Risk of Bias tools.

Total Menopausal Symptoms:

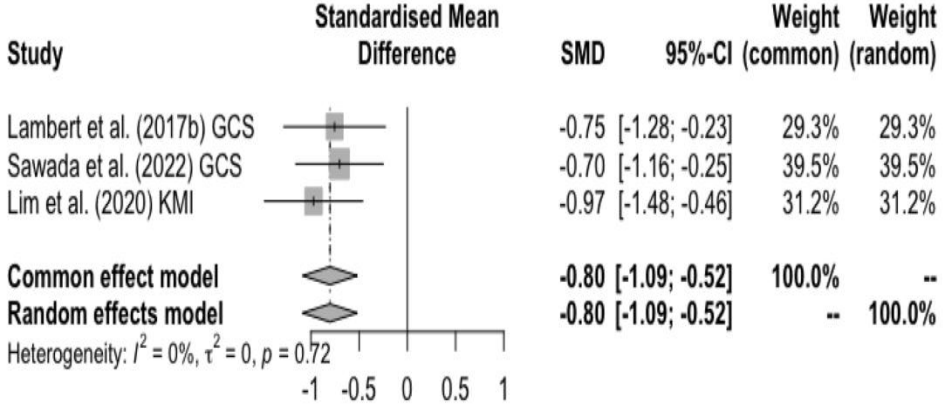


Vasomotor Symptoms:

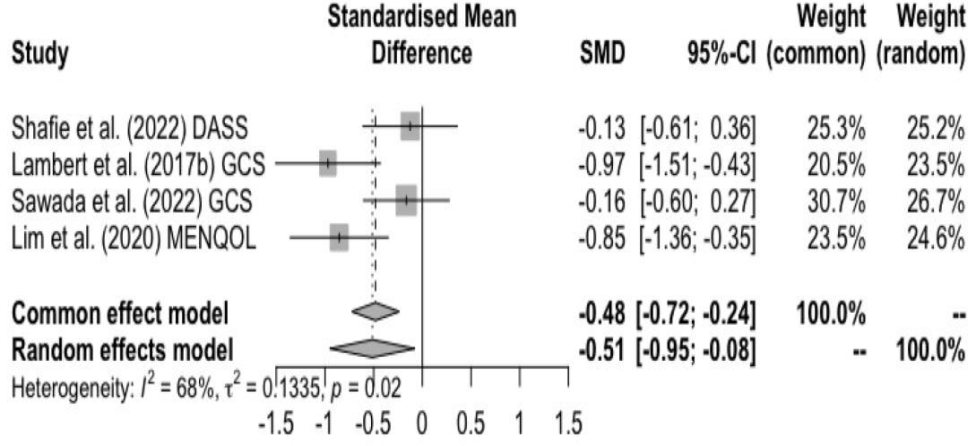


This review found evidence that probiotics could lead to improvements in menopausal symptoms, cardiovascular, vaginal and bone health, and enhancing the effects of low dose estriol and isoflavones.

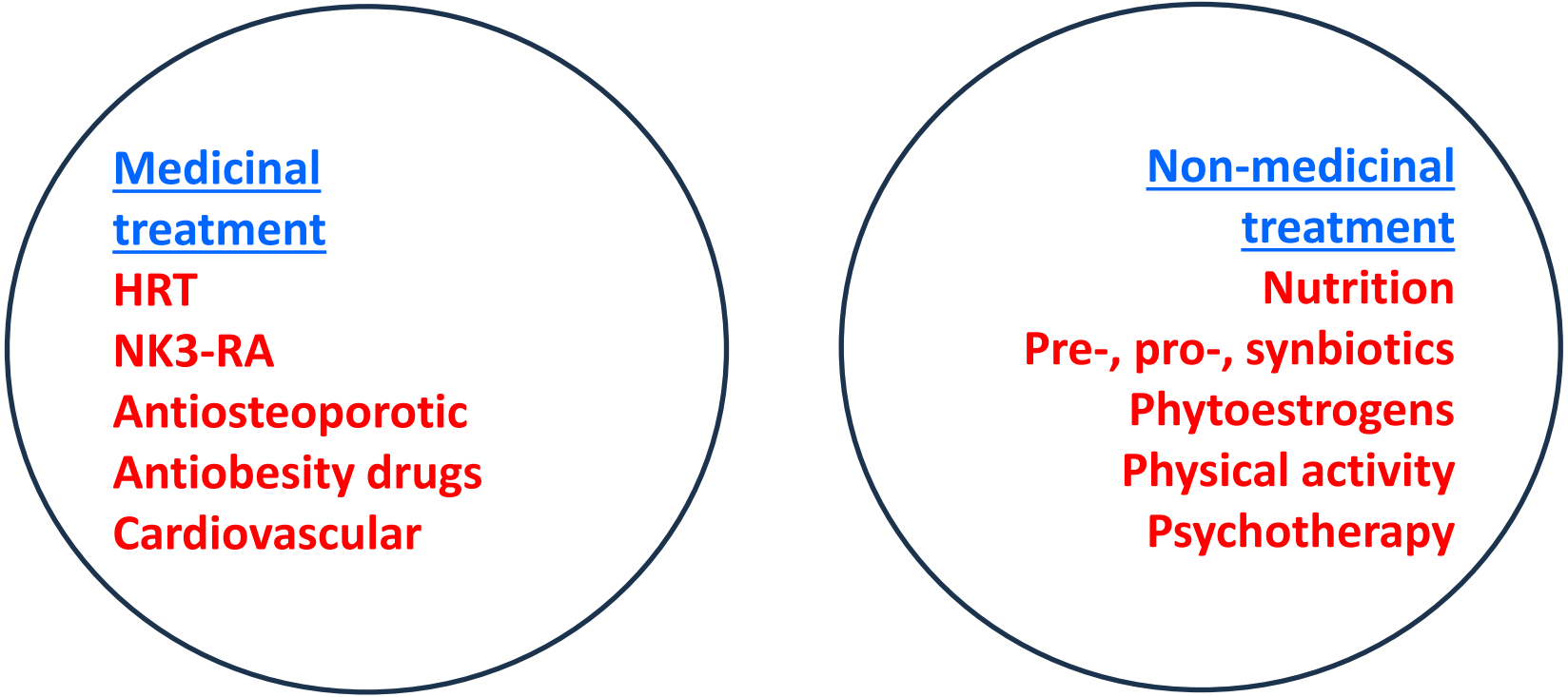
Total Menopausal Symptoms (with Shafie et al. omitted):



Psychological Symptoms:



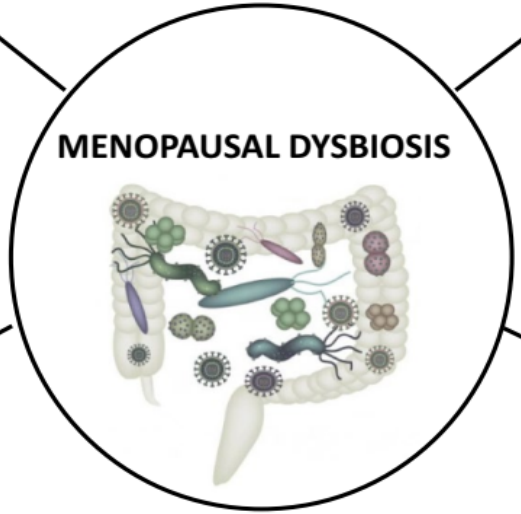
The holistic approach



Review conclusions

All these studies support the **feasibility and usefulness of probiotic supplementation - over the standard therapy with calcium and vitamin D - to improve bone health in menopausal women at risk of osteoporosis.**

Therefore, probiotic supplementation seems to have a **potential role both in the prevention of BC and in the management of chemotherapy-induced side effects in BC**. However, more clinical studies are needed to elucidate their efficacy and safety.



Therefore, further studies are required to evaluate whether **probiotic supplementation could represent a useful strategy to modulate the oral microbiota** in postmenopausal women.

This study suggested that lactic bacteria might improve the absorption of soy isoflavones through the hydrolyzation of genistin and daidzin into the active aglycons by glycosidases, thus **increasing the bioavailability of soy isoflavones**.

Mechanism explaining the association between dysbiosis and M-related diseases

Mounting evidence has shown that gender and sex hormones can play a pivotal role in modulating human response to external factors, likely through a different effect on microbiota.

Although further studies are needed, **supplementation with probiotics could represent a useful and safe tool to control several cardiometabolic risk factors** in postmenopausal women.

Probiotics and Prebiotics: Any Role in Menopause-Related Diseases?

Barrea L. et al. Current Nutrition Reports 2023

Maturitas 92 (2016) 1–6

Contents lists available at ScienceDirect

Maturitas

journal homepage: www.elsevier.com/locate/maturitas

A model of care for healthy menopause and ageing: EMAS position statement

Petra Stute[a,*], Iuliana Ceausu[b], Herman Depypere[c], Irene Lambrinoudaki[d], Alfred Mueck[e], Faustino R. Pérez-López[f], Yvonne T. van der Schouw[g], Levent M. Senturk[h], Tommaso Simoncini[i], John C. Stevenson[j], Margaret Rees[k]

Negative search for “microbio”, “probiot”, etc.

Maturitas 212 (2026) 109060

Contents lists available at ScienceDirect

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journal homepage: www.elsevier.com/locate/maturitas

Original article

'Healthy menopause': The European Menopause and Andropause Society (EMAS) 2026 framework for precision, digital, and interdisciplinary midlife health☆

Petra Stute [a,*], Elena Pavicic [a], Eleni Armeni [b], Judith Boban [c], Iuliana Ceausu [d], C. Tamer Erel [e], Timothy Hillard [f], Ludwig Kiesel [g], Tommaso Simoncini [h], Antonina Smetnik [i], Marina Sprem Goldstajn [j], Dorenda van Dijken [k], Margaret Rees [l], Irene Lambrinoudaki [m]

…In addition, the role of the microbiome in menopause-related symptoms and long-term health is increasingly recognized as a potential area of interest, particularly in relation to cardiometabolic, neurological, and inflammatory pathways.

nature aging

Resource

https://doi.org/10.1038/s43587-026-01(

Estropausal gut microbiota transplant improves measures of ovarian function in adult mice

Received: 10 May 2024

Accepted: 7 January 2026

38 pages

Published online: 3 March 2026

Minhoo Kim[1] ✉, Justin Wang[1,2,3], Steven E. Pilley[4], Ryan J. Lu[1,5], Alan Xu[1,6], Younggyun Kim[1,7], Minying Liu[8], Xueyan Fu[8], Sarah L. Booth[8], Peter J. Mullen[1,4,9] & Bérénice A. Benayoun[1,9,10,11,12] ✉

USA

Citation Impact

- Journal Impact Factor: 25.0 (2025)
- 5-year Journal Impact Factor: 26.0 (2025)
- Immediacy Index: 5.1 (2025)
- Eigenfactor® Score: 0.03028 (2025)
- Article Influence Score: 10.206 (2025)
- Source Normalized Impact per Paper (SNIP): 3.978 (2025)
- SCImago Journal Rank (SJR): 9.500 (2025)

Speed

- Submission to first editorial decision (median days): 9
- Submission to acceptance (median days): 220

Usage 2025

- Downloads: 3,934,266
- Altmetric mentions: 19,218

- Recent evidence suggests the gut microbiota may influence ovarian health. Here we show that ovarian aging is associated with distinct gut microbial profiles in female mice and that the **gut microbiome can directly influence ovarian health**.
- Using **faecal microbiota transplantation from young or estropausal female mice, we demonstrate that heterochronic microbiota transfer remodels the ovarian transcriptome, reduces inflammation-related gene expression and induces transcriptional features consistent with ovarian rejuvenation. These molecular changes are accompanied by enhanced ovarian health and increased fertility. Integrating metagenomics-based causal mediation analyses with serum untargeted metabolomics, we identify candidate microbial species and metabolites that may contribute to the observed effects**. Our findings reveal a direct link between the gut microbiota and ovarian health.

YOUR GUT COULD BE AGING YOUR OVARIES... OR HELPING THEM STAY YOUNG



THE GUT–OVARY AXIS

A NEW FRONTIER IN WOMEN'S HEALTH AND LONGEVITY

Conclusions

1. As the life expectancy of modern women increases; the post-menopausal period is becoming as long as the reproductive one.
2. During the peri- and post-menopausal periods, a series of adverse changes begin as a result of the hormonal deficiency; these impair quality of life and increase metabolic and cardiovascular risk, which, within a decade, becomes comparable to that seen in men.
3. Very few women seek medical advice, and even fewer receive treatment, despite the current re-evaluation of hormone replacement therapy.
4. The healthy gut microbiota plays a role in the regulation of sex hormones and, after the menopause, may help to reduce the adverse effects of hormone deficiency.
5. A number of studies support the use of various strategies to optimise the gut microbiota, including prebiotics, probiotics and synbiotics, as part of a holistic approach to the prevention or treatment of M-related conditions and to improving women's quality of life.
6. Recent data suggest direct effects of gut microbiota on ovaries.

OMNi-BiOTiC® *Active* improves the absorption of nutrients

Can a multispecies probiotic improve micronutrient uptake, hormone production and inflammatory responses?

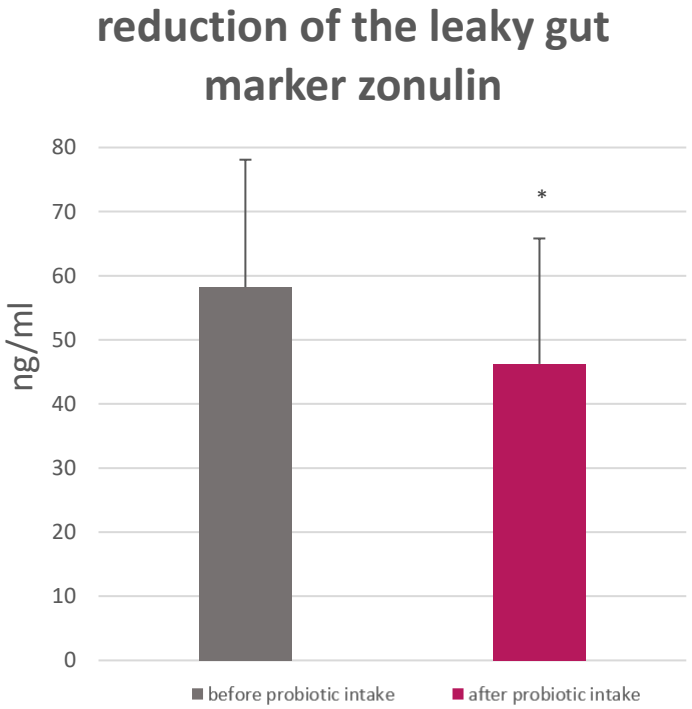
→ An observational study



STUDY DESIGN

No. of Subjects	20 **post-menopausal** women, 50-60 years old, physically active and health-conscious diet
Methods	**1x daily OMNi-BiOTiC® *Active* for 9 weeks** comparison of parameters at the beginning and end of the study
Parameters	microbiome analysis
	hormone status, vitamin, trace elements and minerals
	inflammation markers
	intestinal permeability markers

OMNi-BiOTiC® *Active* increases the barrier function in the intestine

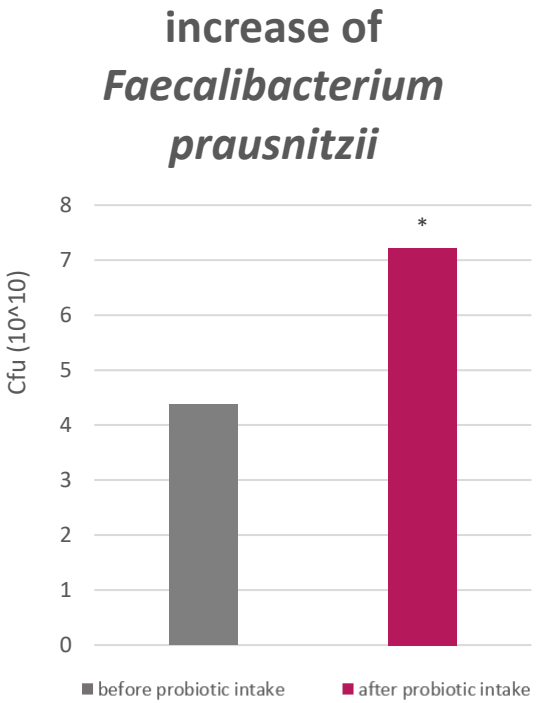


OMNi-BiOTiC® *Active* **reduces** zonulin (marker for **leaky gut**) and thus **increases the barrier function** in the intestine

V. Stiegelbauer, B.Schütz et al, OM und Ernährung 2019

Institut AllergoSan

OMNi-BiOTiC® *Active* leads to an increase of *Faecalibacterium prausnitzii*



OMNi-BiOTiC® *Active* promotes the **growth** of butyrate-producing ***Faecalibacterium prausnitzii*** in postmenopausal women

V. Stiegelbauer, B.Schütz et al, OM und Ernährung 2019

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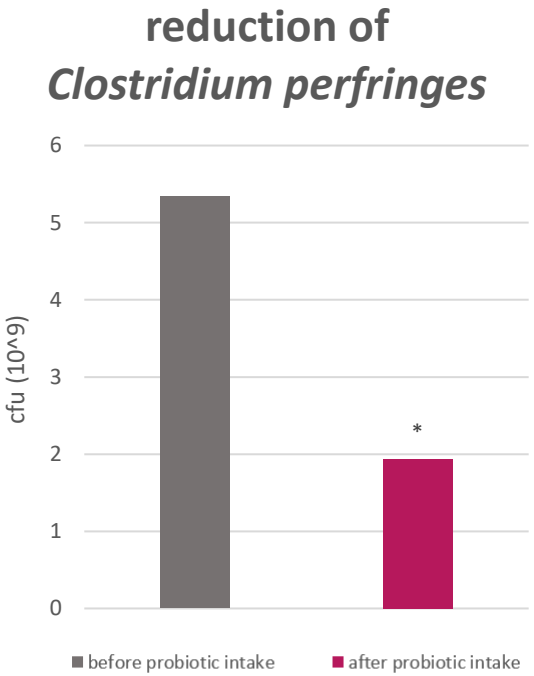
OMNi-BiOTiC® *Active* reduces the pathogen burden



OMNi-BiOTiC® *Active* reduces pathogenic germs (*Clostridium perfringens*) in postmenopausal women

V. Stiegelbauer, B.Schütz et al, OM und Ernährung 2019

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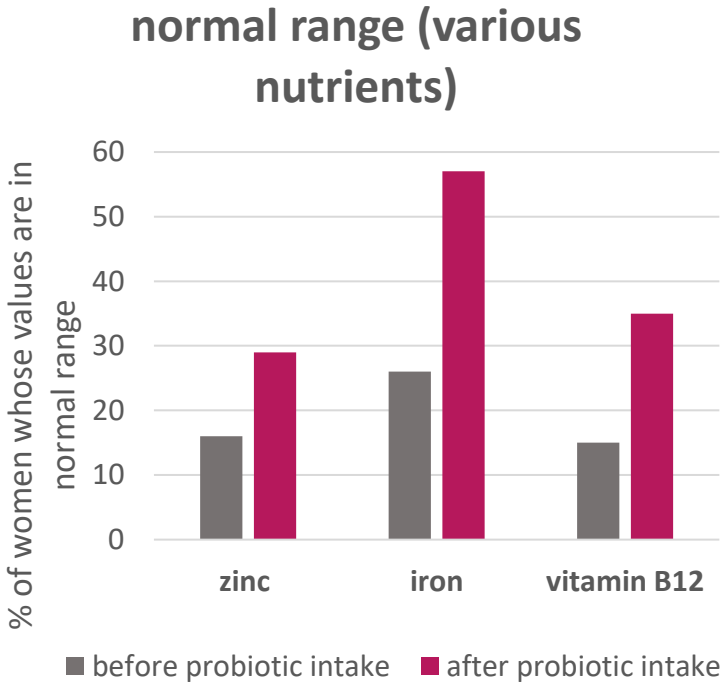
OMNi-BiOTiC® *Active* improves nutrient absorption



OMNi-BiOTiC® *Active* improves the cellular availability of nutrients in postmenopausal women

V. Stiegelbauer, B.Schütz et al, OM und Ernährung 2019

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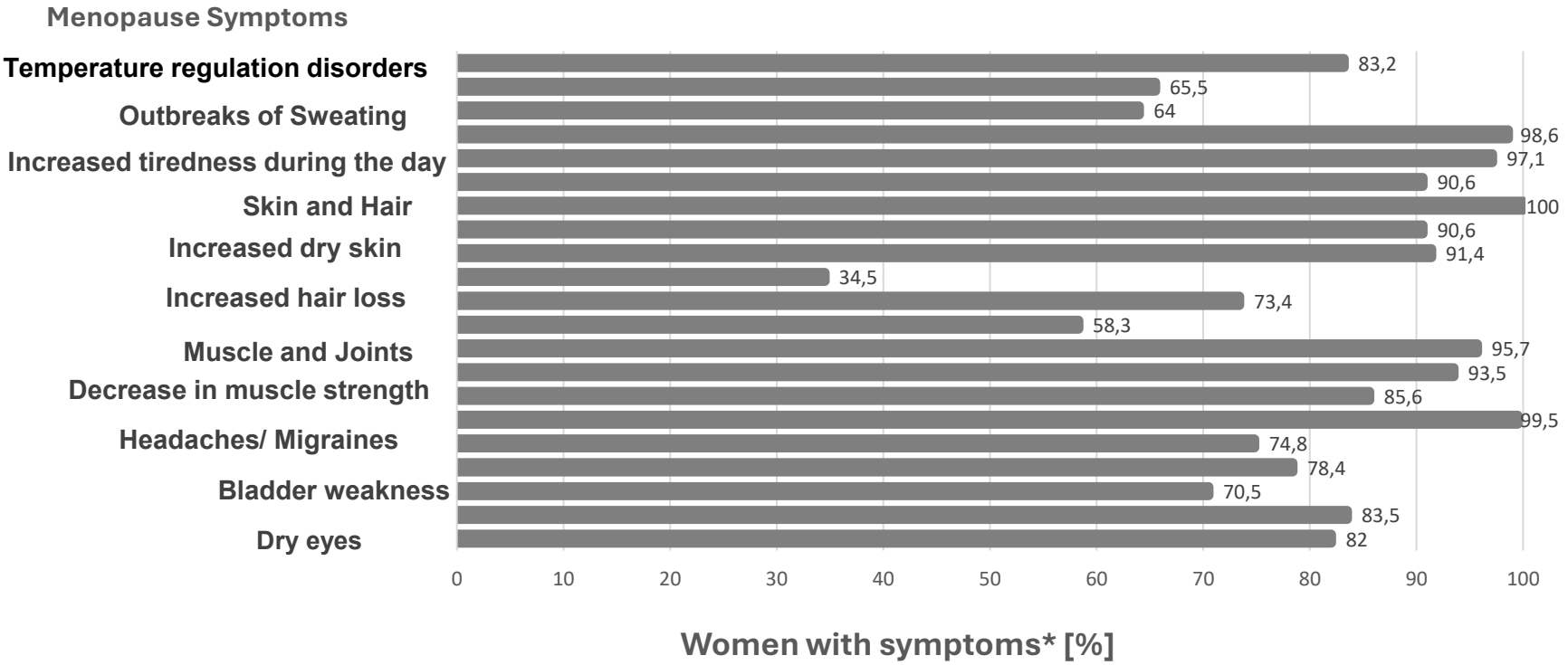
The positive effect of a multispecies probiotic on the relief of menopausal symptoms

Study Design

Participants	139 menopausal Women
Implementation	2 x daily (je $5*10^9$ CFU) OMNi-BiOTiC® *Active* for 8 weeks
Parameters	Questionnaire on menopausal symptoms before and after probiotic intake

Women in the menopause show a variety of different symptoms



*Proportion of women with various menopausal symptoms at the start of the study

Kolleritsch S. "Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause", OM u Ernährung, vol. 188, pp. 29-34 (2024)

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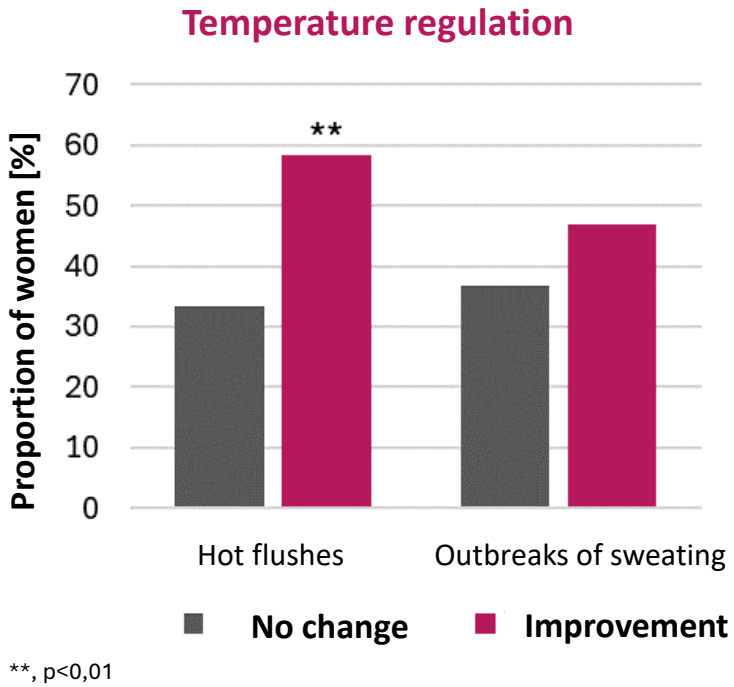
OMNi-BiOTiC® *Active* significantly improves hot flushes



**, p<0,01

Intake of **OMNi-BiOTiC® *Active*** for 8 weeks leads to a **reduction** in **hot flushes in 58%** of women. **Sweating** is reduced in **47%** of women.

Kolleritsch S. "Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause", OM u Ernährung, vol. 188, pp. 29-34 (2024)

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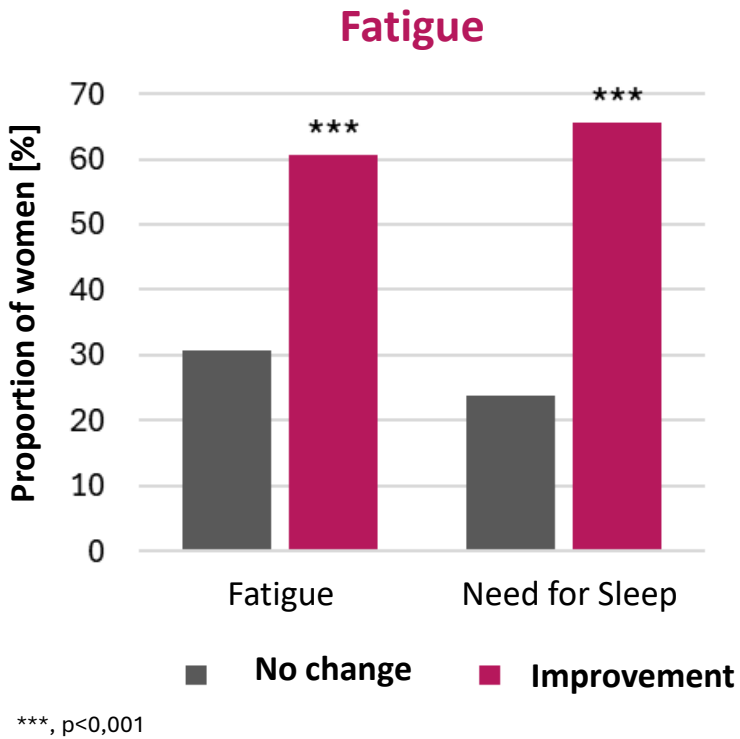
OMNi-BiOTiC® *Active* significantly improves fatigue



***, p<0,001

OMNi-BiOTiC® *Active* leads to a significant **reduction** in **tiredness** in **61%** of women, and an **increased need for sleep** is even **reduced in 66%** of women.

Kolleritsch S. "Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause", OM u Ernährung, vol. 188, pp. 29-34 (2024)

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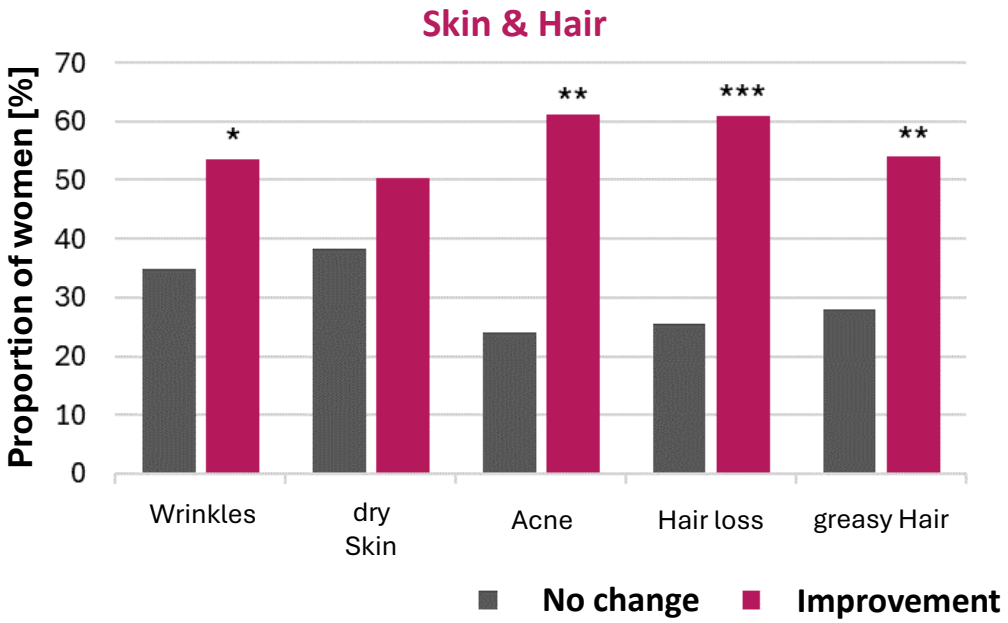
OMNi-BiOTiC® *Active* has a positive effect on the skin and hair



*, p<0,05; **, p<0,01; ***, p<0,001

More than half of the participants experienced **significant improvements** in **skin** and **hair appearance** as well as a **reduction** in **hair loss** during the 8-week intake of **OMNi-BiOTiC®*Active***.

Kolleritsch S. "Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause", OM u Ernährung, vol. 188, pp. 29-34 (2024)

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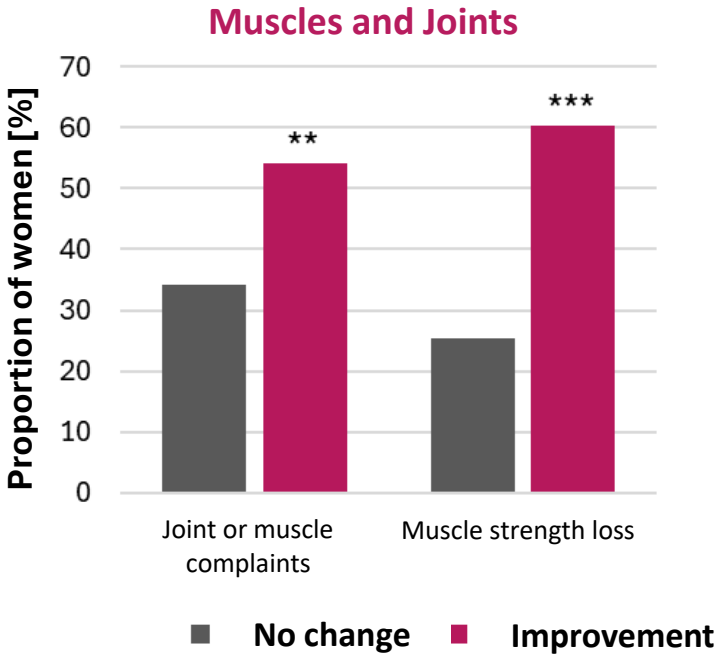
OMNi-BiOTiC® *Active has a positive effect on muscles and joints*



**, p<0,01; ***, p<0,001

During the 8-week probiotic intervention with **OMNi-BiOTiC® *Active***, more than half of the test subjects experienced an **improvement** in **joint** and **muscle pain** as well as a **reduction in muscle strength**.

Kolleritsch S. "Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause", OM u Ernährung, vol. 188, pp. 29-34 (2024)

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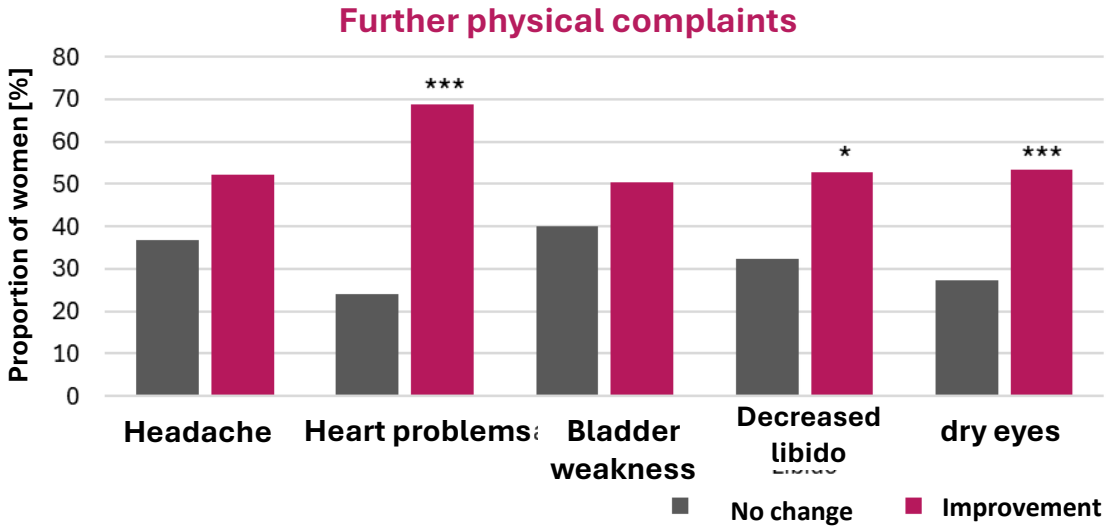
Other physical complaints are significantly improved by OMNi-BiOTiC® *Active*



*, p<0,05; ***, p<0,001

- **OMNi-BiOTiC® *Active* alleviates heart problems, increases libido** and **significantly reduces dry eyes**.
- Other physical complaints such as **headaches** and **bladder weakness** were also **noticeably reduced** in the majority of women affected.

Kolleritsch S. "Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause", OM u Ernährung, vol. 188, pp. 29-34 (2024)

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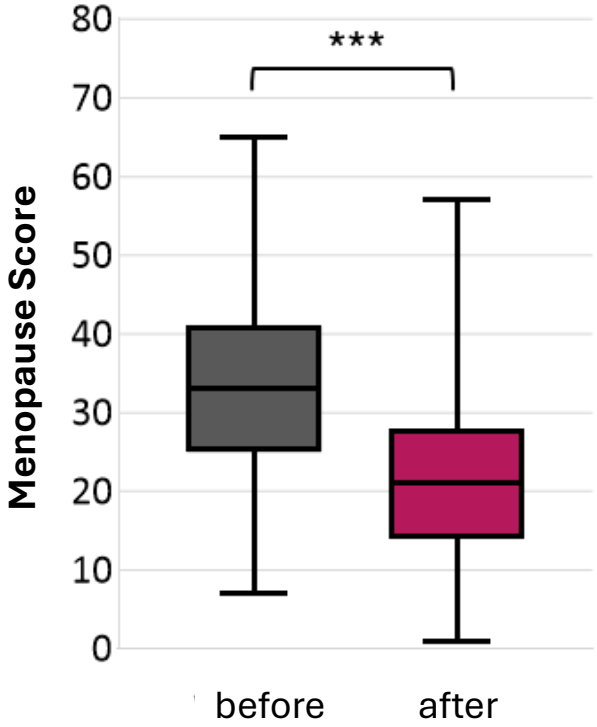
Significant improvements in menopausal symptoms with OMNi-BiOTiC® *Active*



Overall, the intake of **OMNi-BiOTiC® *Active*** resulted in a **significant reduction** in **various menopausal symptoms**.

Kolleritsch S. "Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause", OM u Ernährung, vol. 188, pp. 29-34 (2024)

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Results

OMNi-BiOTiC® *Active* contributes **significantly** to the **reduction** of numerous **menopausal symptoms** through the positive modulation of the intestinal microbiome.

Taking **OMNi-BiOTiC® *Active*** for 8 weeks leads to a significant improvement in menopause symptoms such as:

- ✓ hot flushes
- ✓ tiredness
- ✓ muscle and joint problems
- ✓ hair loss
- ✓ headaches
- ✓ rapid heartbeat

Kolleritsch S. “Der Effekt eines Multispezies-Probiotikums auf die Linderung von Beschwerden in der Menopause”, OM u Ernährung, vol. 188, pp. 29-34 (2024)

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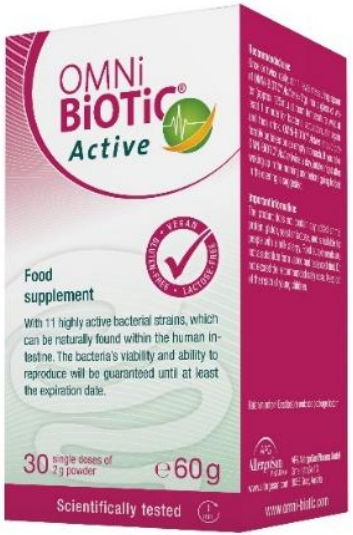
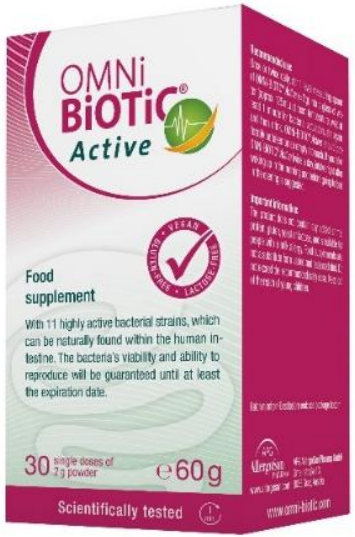
Key messages
OMNi-BiOTiC® *Active*

- supports the intestinal flora with increasing age with *Bifidobacteria* → protection against infections
- improves the **nutrient uptake:** increases the absorption of essential vitamins by the epithelial cells
- prevents the colonization of pathogens such as *Clostridium difficile, ETEC, Salmonella*
- reduces inflammation by increased butyrate production

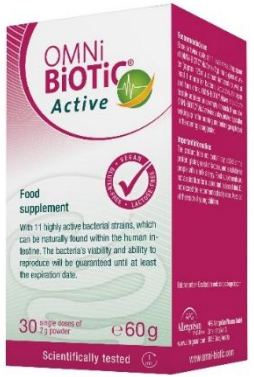


Indications
OMNi-BiOTiC® *Active*

- ✓ to improve the resilience (e.g. before chemotherapy)
- ✓ reduced food intake, e.g. in advanced age, during diets
- ✓ improves diversity: increase of different bacteria, allowing different functions such as hormone and vitamin production to be resumed:
  - for full recovery after illness and return to the original shape
  - chronic diseases
  - in case of lack of vitamin K production



Composition
OMNi-BiOTiC® *Active*



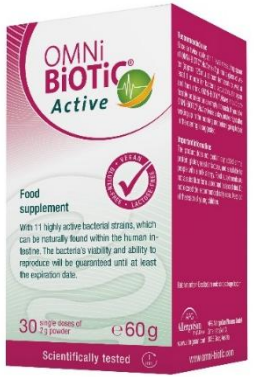
11 bacterial strains

at least 5 billion germs per portion

- *Lactobacillus acidophilus* W37
- *Lacticaseibacillus paracasei* W56
- *Levilactobacillus brevis* W63
- *Lactococcus lactis* subsp. *lactis* W58
- *Bifidobacterium longum* subsp. *longum* W108
- *Bifidobacterium animalis* subsp. *lactis W51*
- *Bifidobacterium breve* W25
- *Bifidobacterium animalis* subsp. *lactis* W52
- *Lactococcus lactis* subsp. *lactis* W19
- *Ligilactobacillus salivarius* W24
- *Bifidobacterium bifidum* W23

rice starch, maltodextrin, bacterial strains (see above), plant protein, potassium chloride, magnesium sulfate, manganese sulfate

Recommended use
OMNi-BiOTiC® *Active*



stir 1 measuring spoon (= 2 g) OMNi-BiOTiC® *Active*
1-2 x daily into a glass of water

wait at least 1 minute for activation
stir again and then drink

➢ideal in the morning before breakfast and/or
in the evening before going to bed

Attention: do not heat above 40°C!

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Active through life!



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