

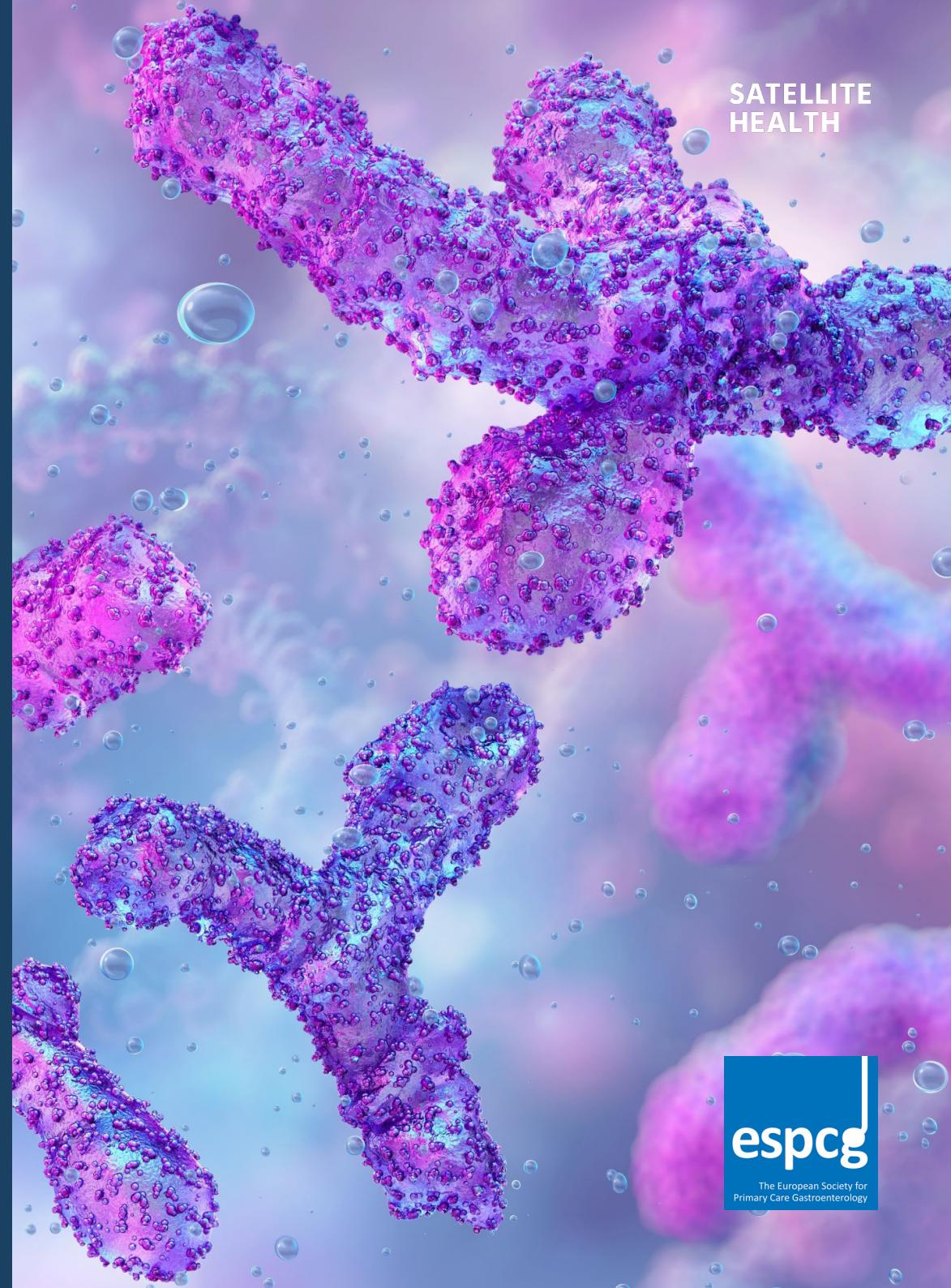
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The Use of Probiotics in Germany – How Can Clinicians Support Patients?

Insights from a
Multidisciplinary
Advisory Board

A Roundtable Report
written by Dr. Lisa Kempe

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Introduction

Enhanced understanding of the microbiome is helping medicine to provide answers to disease and good health¹. Dysbiosis, an imbalance in the microbial community, has been associated with various conditions including type 2 diabetes², obesity², inflammatory diseases like IBD³, and even neurological⁴ and cardiovascular diseases⁵.

At the same time, a balanced microbiome seems to contribute to essential functions like energy recovery from food⁶, protection against pathogens⁷, and immune system modulation⁸.

The microbiome composition varies greatly between individuals⁹, which makes it a complex subject and highlights the need for a personalised approach and the potential for "targeting" of probiotics with specific strains¹⁰.

But the question still remains: What is the role of probiotics, and how can health care professionals support their patients when it comes to choosing and deciding how and when to use them?¹¹

With the German probiotics market being one of the largest and most dynamic in Europe¹², there's a growing need for clinicians to provide patients with guidance in order to ensure the best outcomes^{13, 14}.

With guidance in mind, PrecisionBiotics® conducted research amongst consumers (reference required) and clinicians in June 2025. This was followed by an Advisory Board conducted in association with the European Society for Primary Care Gastroenterology in July 2025.

The following participated in this advisory board:

Constanze Bias

Prof. Dr. Michaela Döll

Prof. Dr. Ali Canbay

Prof. Sir Pali Hungin

Purpose

1. Share clinical experience and opinions on the use of probiotics
2. Review the results of attitudinal research amongst consumers in Germany and a survey of 50 clinicians
3. Identify areas of opportunity and provide recommendations for improving patient knowledge of probiotics and usage

In this report, I will be sharing the key findings from the Advisory Board and research conducted in advance of the session.

Dr Lisa Kempe, Editor

1. Clinical Perspectives on Probiotic Use

"IBS is a complex condition. Probiotics may help but effects can be varied"

- Constanze Bias.

Irritable bowel syndrome (IBS) is one of the most common gastrointestinal disorders worldwide, with an estimated global prevalence of 4%¹⁵. In Germany, approximately 1.1 million people have IBS¹⁶. Women are more likely to be diagnosed with IBS than men¹⁷, and not everyone with IBS symptoms—which include gastrointestinal issues and mental health conditions—seeks medical attention, so the true prevalence may be higher¹⁸.

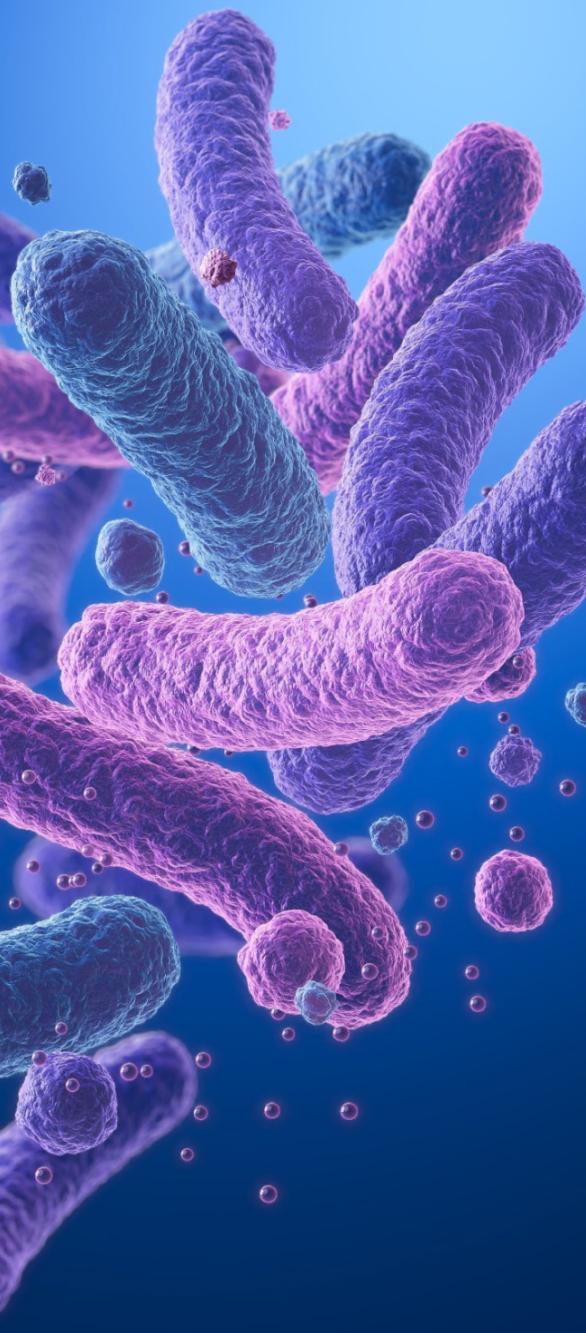
IBS is a major driver of probiotic interest and a topic discussed by the Advisory Board, starting with a review of Professor EMM Quigley's article, *A Probiotic in IBS – from Basic Science to Real World Clinical Practice*¹⁹, which was recently published by the Primary Care Society for Gastroenterology in the UK. The article covers the relationship between the gut microbiome and irritable bowel syndrome (IBS), emphasising the role of probiotics, especially *Bifidobacterium longum* spp.

longum **35624™**, in both the science and real-world management of IBS.

It was agreed that the clinical trials and real world evidence for *Bifidobacterium longum* spp. *longum* **35624™** as presented in Prof Quigley's article are compelling with improvements in overall IBS symptoms and specific complaints such as bloating and abdominal pain.

While IBS remains complex and multifactorial, "**probiotics seem to work somehow**", said Professor Ali Canbay and targeted probiotics offer a valuable adjunct to limited conventional therapies. Constanze Bias talked about the importance of combining probiotics with lifestyle change. "**Patients need to take a holistic approach. Our intestines would be happy to have more fibre**", she said, "**and when I see a patient who is prepared to make changes to their diet, I know there's a greater chance of success**".





Moving on from IBS, the Advisory Board discussed liver disease, which is a significant health concern in Germany²⁰. Hospitalisation rates for cirrhosis have increased significantly in recent years^{21, 22}. Non-alcoholic fatty liver disease (NAFLD) is also a growing concern, with a four-fold increase in cirrhosis cases attributed to it^{23, 24}. In fact, cirrhosis is present in approximately 1% of all hospital admissions in Germany²⁵.

The Advisory Board noted that hepatologists frequently report using probiotics in patients with liver cirrhosis and hepatic encephalopathy, with observed benefits including reduced infection rates, improved hepatic outcomes, and possible modulation of the gut-liver axis^{26, 27, 28}.

Mechanisms discussed to explain these benefits included:

- Reduction of intestinal permeability (leaky gut)^{29, 30}
- Anti-inflammatory effects linked to microbial modulation³¹
- Increased production of short-chain fatty acids (SCFAs)^{32, 33}

These findings highlight the emerging role of probiotics as adjunctive therapy in managing liver disease by targeting the gut-liver axis and its multiple downstream effects³⁴.

Probiotic use in children was also discussed. Was this appropriate, and could similar results be achieved through diet? The advisory board noted that usage is increasing, particularly for gut-related symptoms, post-antibiotic recovery, and in cases of cow's milk protein intolerance^{35, 36}.

Some paediatricians recommend probiotics from birth in select cases (e.g., after caesarean section) to support microbiome establishment and reduce inflammation^{37, 38}. Bias said that it is ***"It is recognised that a child's microbiome is significantly influenced by external factors, particularly the microbiota of family members and the mother especially via her intestine and skin. It can be helpful to support the child's healthy development through good nutrition and supplementation of the mother and child if needed"***³⁹.

Growing awareness of liver health and metabolic syndrome is driving increased interest in probiotics among men, with a focus on the gut-liver axis and metabolic outcomes^{40, 41}.

Overall, the board agreed that while the core microbiota is highly individualised and resistant to permanent change, probiotics can transiently influence the microbial environment, displace pathogenic bacteria and modulate immune responses. Probiotics can work but are most effective as part of a comprehensive management plan including dietary fibre and lifestyle modification. Professor Michaela Döll also noted it was ***"important to choose scientifically proven strains"***. The duration of probiotic use is typically recommended at three months or longer with the understanding that benefits accrue gradually.

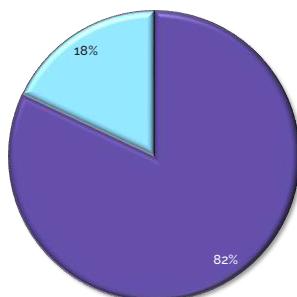
2. Professional Attitudes and Prescribing Practices

A June 2025 survey³ of 50 German healthcare professionals conducted by ID Insight Consulting and Satellite Health, found that 82% believe probiotics work best when targeted strains are matched to specific health issues, rather than using high-dose, multi-strain formulations indiscriminately (Fig.1). The Advisory Board discussed the finding and agreed with Bias that **"the trend is shifting from the earlier philosophy of "more strains, higher dose" to a more nuanced, evidence-driven approach emphasising strain".**

86% of surveyed clinicians would recommend probiotics to mitigate antibiotic-associated side effects. However, only 36% would always recommend (Fig.2). According to the advisory board, there appears to be a generational divide: younger clinicians are more likely to recommend probiotics while older colleagues often advise dietary sources such as yogurt or sauerkraut. Timing probiotic administration to avoid counteraction by antibiotics and patient education are both practical challenges.

"Which of the following two statements do you agree with most?"

- Probiotics work best when targeted, with specific strains of gut bacteria being used for specific health issues
- Probiotics work best by using a large amount of gut bacteria without any consideration for the specific health issue

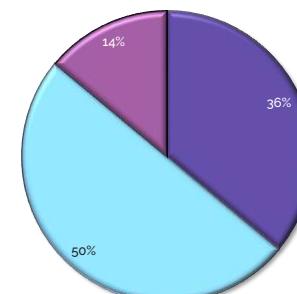


- More than 80% of the health professionals we surveyed agreed that probiotics work best when targeted.
- Only 18% felt that simply using a large amount of gut bacteria is the most effective use of probiotics.

Figure 1

"Would you recommend the use of probiotics to restore gut health and mitigate side effects for patients who are taking antibiotics?"

■ Yes, always ■ Yes, in some cases ■ No



- In total we have 86% of our respondents saying that they would recommend the use of probiotics for patients taking antibiotics.
- Most of those who do recommend the use of probiotics with antibiotics, feel that this is for some cases not all. 50% of all our sample said this.
- Over a third of doctors and dietitians (36%) we spoke to said they would always recommend probiotics in these circumstances.

Figure 2

"I would advise patients taking an antibiotic to take a probiotic at the same time, especially if they are experiencing side effects. I would also recommend continuing with the probiotic for a period of time which reflects the duration of the course e.g. for 10 days afterwards if the antibiotic course is 10 days and in some cases I think it can be beneficial to continue for 4-6 weeks." said Professor Michaela Döll. Professor Pali Hungin said that probiotics may help with some

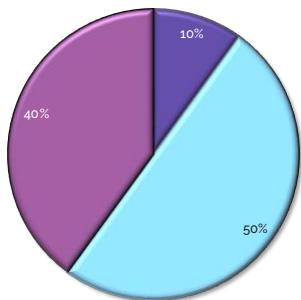
of the side effects associated with antibiotics including diarrhoea and therefore he wasn't surprised that a high percentage of clinicians would recommend taking them.

The majority of clinicians surveyed, 90%, recommend probiotic courses of at least three months with some advocating continuous use for chronic conditions (Fig.3). 86% would advise against switching brands, a view supported by the advisory board (Fig.4). ***"It's a case of trial and error but if it's***

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"When recommending probiotics, which one of the following would you say is the best way to use them?"

- For a short period only (up to one week).
- For at least three months
- On a continuous basis to support overall gut and health wellbeing

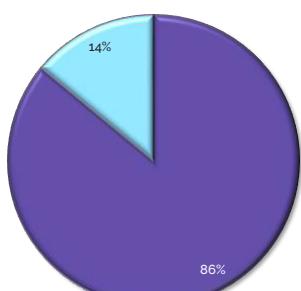


- Only 10% say that it's best to use probiotics for a short period of up to one week.
- The rest (90%), say that it is best to recommend the use of probiotics for at least three months or even on a continuous basis.
- We have 40% saying that it's best to use probiotics on a continuous basis

Figure 3

"Which of the following two statements do you agree with most?"

- Once someone has found a probiotic brand that works for them, they should continue to use that brand
- I think's a good idea to switch brands



- The large majority of health professionals we spoke to (86%) agree that someone should continue with a probiotic brand if it works for them.
- Only 14% agree that it's a good idea to switch brands.

Figure 4

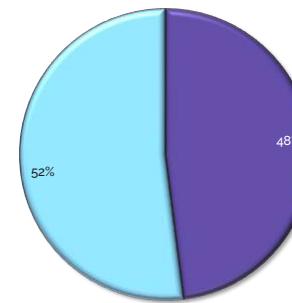
working then stick with it", said Hungin. When advising patients on the right probiotic for them, the general consensus was that GPs tend to recommend a familiar product while specialists are more likely to tailor recommendations to individual patient needs and evolving evidence. Hungin proposed the idea of a probiotic chart for patients saying, ***"I think a chart could be helpful and enable patients to match the probiotic to their symptoms".***

There is a near 50/50 split among German healthcare professionals regarding the safety and necessity of probiotic use in children over three years for gut health maintenance (Fig.5).

According to the Advisory Board SME paediatricians advocate early intervention (even from birth) in cases of caesarean delivery or familial GI issues while others believe healthy children will naturally develop a robust microbiome without supplementation. The board agreed that more paediatric-specific research is needed and that routine use should be carefully considered based on individual risk factors and family history.

"Do you believe that it is safe for children (over 3 years of age) to use probiotics to maintain gut health?"

- Yes
- No



- Opinion is clearly divided on the issue of whether it's safe for children over 3 years of age to use probiotics.
- We have almost a 50/50 split amongst our respondents but the slight majority (52%) say that they do not believe it is safe.
- It may be that this is more a reflection of whether it is 'appropriate' as much as 'safe' for children as young as 3 to use probiotics.

Figure 5

Sample size: 50

3. Consumer Insights

Overview

The Advisory Board meeting included an in-depth review of consumer research (2025 PrecisionBiotics® Proprietary Quantitative Research on Gut Health with Ipsos (Germany, n=1000)) focused on awareness, attitudes, and behaviours regarding gut health and probiotics among the German population. Drawing on data collected from 1,000 German consumers, as well as frontline clinical observations, the discussion highlighted significant patterns, drivers, and challenges impacting patient and consumer engagement with gut health interventions.

Awareness of Gut Health and the Microbiome

The majority of respondents rated digestive and gut health as "very" or "extremely

We asked 1,000 German consumers how important gut health is to their overall wellbeing?

How important do you believe digestive/gut health is to your overall well-being? by Age & Gender BANNER								
Column %	Total	18-24	25-34	35-44	45-54	55+	Male	Female
Not important	1%	2%	2%	1%	1%	1%	2%	1%
Slightly important	3%	10% ↑	2%	3%	3%	1%	4%	2%
Moderately important	21%	27%	25%	19%	23%	17%	26% ↑	16% ↓
Very important	50%	43%	45%	51%	46%	55%	46%	53%
Extremely important	25%	18%	26%	26%	28%	25%	22%	29%
NET: Very important + Extremely important	75%	61% ↓	71%	77%	73%	81% ↑	68% ↓	82% ↑
Column n	1000	110	170	190	180	350	496	499
Filter: Germany; Unweighted; base n = 1000; 50% filtered out								
Multiple comparison correction: False Discovery Rate (FDR) (p = 0,05)								

Figure 6

important" to their overall wellbeing, with 75% falling into these categories (Fig.6). This sentiment matches broader European trends identified by participants.

Most consumers were aware of connections between gut health and outcomes such as immunity, weight management, nutrient absorption, and even mental health (Fig.7). Over half the survey respondents recognised links to inflammation, sleep, and energy, though knowledge about links to liver and reproductive health was less common.

We asked 1,000 German consumers which of the following areas gut health has an impact on

General health	62%
Weight management	53%
Immunity	52%
Nutrient absorption	50%
Mental health (e.g., stress, mood)	49%
Sleep	48%
Inflammation levels	48%
Energy	47%
Skin/hair/nail health	35%
Heart health	28%
Hormonal balance	26%
Cognitive health (e.g., memory and focus)	24%
Bones and joints health	21%
Oral health	18%
Reproductive health	15%
None of the above	1%
I don't know	8%

Figure 7

Familiarity with the Microbiome Concept

While 95% had heard of the “gut microbiome,” the vast majority acknowledged limited understanding, with only 10% claiming real familiarity (Fig.8). There appears to be a gap between awareness of terminology and functional

understanding of the microbiome’s impact. Healthcare providers remain a trusted, primary source of information for many, though some panellists questioned whether this actually reflects clinical practice frequency. All agreed that print magazines, television, health podcasts, and social media platforms (particularly among under-

45s) are important channels for microbiome education. In Germany pharmaceutical and supplement companies actively advertise on TV and in waiting rooms, increasing public exposure to microbiome-related content.

The Advisory Board agreed with figures from the research that showed vitamins and minerals

were the most commonly used supplements, followed by probiotics with protein and prebiotic supplements trailing behind (Fig.9). Probable drivers of probiotic use were discussed including gut symptoms, recovery after antibiotics, and specific conditions such as cow’s milk protein intolerance.

We asked: Are you familiar with the concept of the gut microbiome and its impact on health?

Are you familiar with the concept of the gut microbiome and its impact on health? by Age & Gender BANNER								
Column %	Total	18-24	25-34	35-44	45-54	55+	Male	Female
Know a lot about it	9%	11%	8%	9%	13%	7%	8%	10%
Heard of it and know a little about it	55%	47%	57%	58%	52%	56%	51% ↓	60% ↑
Heard of it but don't really know what it is	31%	31%	29%	29%	30%	33%	35% ↑	27% ↓
Never heard of it	5%	11% ↑	5%	4%	4%	3%	6%	3%
Column n	1000	110	170	190	180	350	496	499

Filter: Germany; Unweighted; base n = 1000; 50% filtered out
Multiple comparison correction: False Discovery Rate (FDR) (p = 0,05)

Figure 8

30% said they take a dietary supplement. We asked them which types?

You mentioned that you take dietary supplements for digestive/gut health, which of the following types of supplements do you take? by Age & Gender BANNER								
Column %	Total	18-24	25-34	35-44	45-54	55+	Male	Female
Vitamins (such as multivitamins or individual vitamins like vitamin A, E, etc.)	53%	53%	52%	49%	59%	53%	58%	49%
Minerals (such as calcium, magnesium, iron, and zinc)	53%	43%	55%	52%	61%	50%	50%	54%
Probiotics (good bacteria / culture)	38%	23%	40%	40%	31%	45%	30%	44%
Omega-3 fatty acids (DHA, EPA)	29%	30%	33%	18%	37%	29%	31%	27%
Prebiotics / dietary fibers	27%	10%	28%	26%	37%	28%	28%	26%
Botanicals or herbs (plant extracts, berries, etc.)	24%	47%	12%	17%	25%	29%	28%	21%
Digestive enzymes	8%	10%	9%	6%	4%	9%	9%	7%
Postbiotics	7%	13%	10%	3%	2%	8%	11%	4%
Others (coenzyme Q10, choline, alpha lipoic acid (ALA), glutathione, etc.)	9%	3%	7%	8%	16%	10%	8%	10%
None of the above	2%	0%	2%	5%	0%	3%	2%	3%
I don't know	2%	0%	2%	2%	6%	2%	1%	3%
Column n	302	30	58	65	51	98	124	178

Filter: Germany; Unweighted; base n = 302; total n = 1000; 698 missing; 50% filtered out
Multiple comparison correction: False Discovery Rate (FDR) (p = 0,05)

Figure 9

Patient Information-Seeking and Decision-Making

Most consumers who purchase probiotics would appear to base their choice of product on the perceived number of bacteria and the breadth of strains, rather than on scientific evidence for indications or strain specificity (Fig.10).

A sizable portion rely on healthcare professionals for advice, but a "confusion factor" exists due to limited clinical consensus and the diversity of available products. When it comes to guidance from clinicians on length of use the panel felt most favour probiotic use for at least three months, particularly in the context of post-antibiotic treatment or functional GI symptoms. Nevertheless, many consumers remain uncertain about optimal treatment durations and switch brands or discontinue prematurely.

The research highlighted gaps between the science and market offerings. Despite increasing awareness of specific strains and targeted probiotic use among healthcare professionals, many consumers still gravitate toward

For those who purchased probiotics we asked: Which factors were most important?

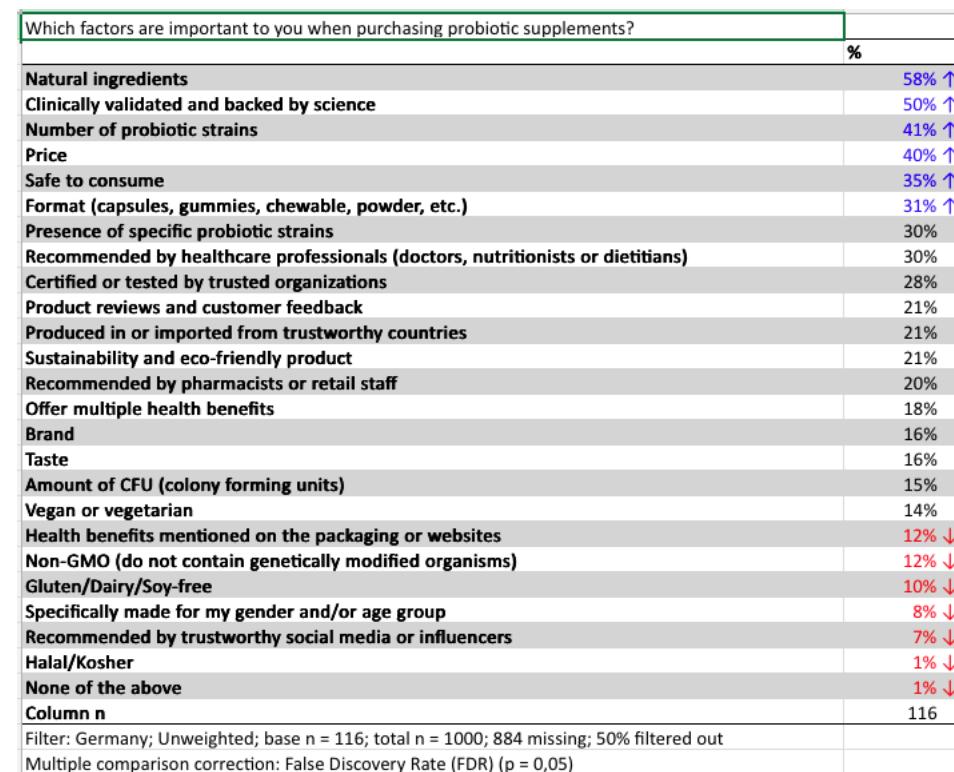
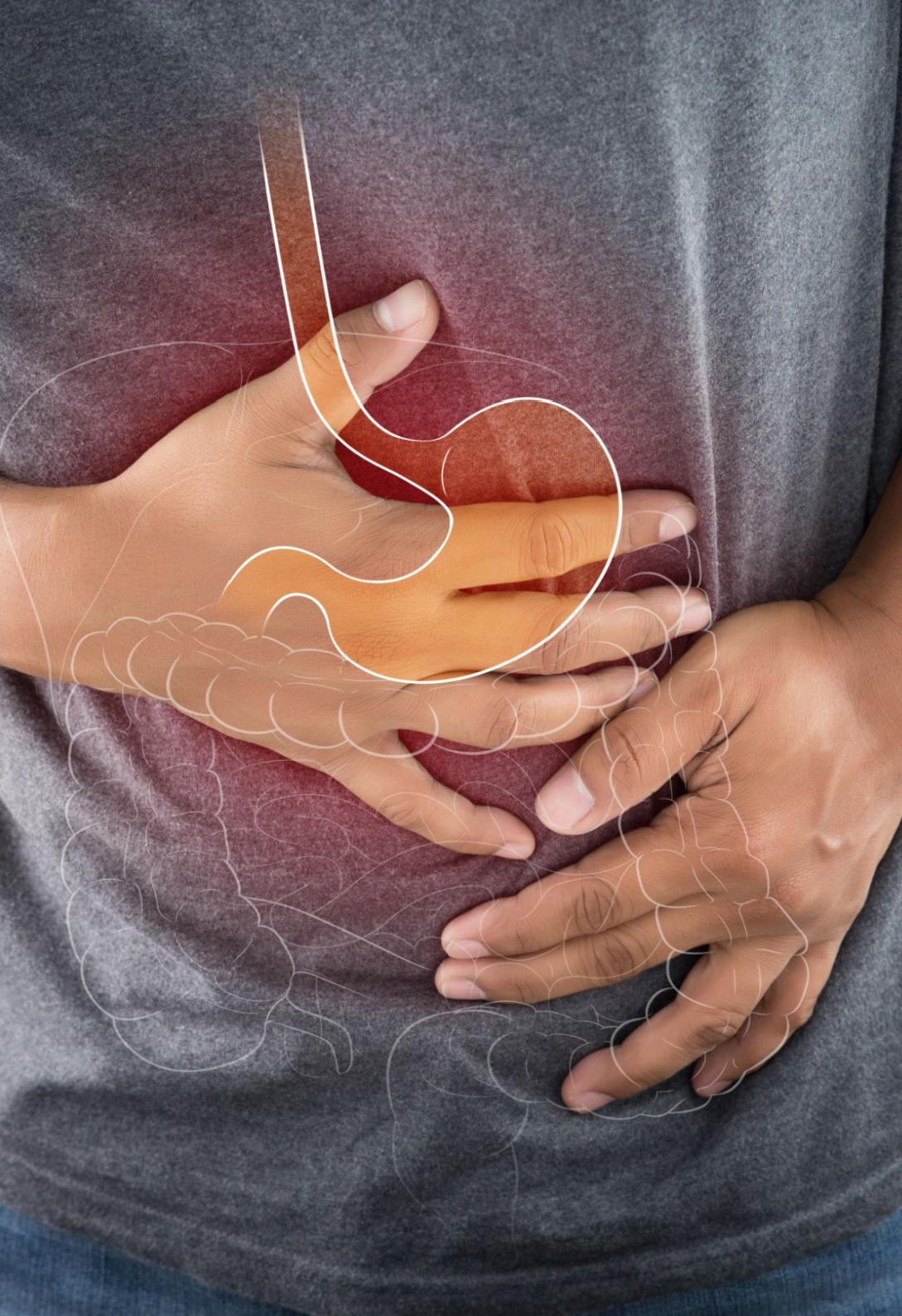


Figure 10

products with broad claims and high bacterial counts. The data suggest a high level of trust in healthcare professionals; however, both patients and some clinicians lack specific product and indication knowledge, especially regarding paediatric and long-term probiotic

use. Germany demonstrates both high consumer awareness of gut health and growing demand for guidance. There is notable willingness to pay for gut-related supplements, but the Advisory Board were concerned that cost remains a barrier for some groups.



Summary

Finding	Consumer Behaviour/ Implication
High gut health awareness	Drives supplement use, but detail is lacking
Limited microbiome understanding	Knowledge gaps about strains & evidence
Trust in healthcare providers	Opportunity for evidence-based intervention
Influence of media and social channels	Source of both information and confusion
Supplement selection based on quantity	Consumers prioritise dose over specificity
Duration/use confusion	Highlights need for clearer guidance
Gender/age differences	Awareness, interest, and supplement patterns

Figure 11

The Advisory Board said that some of the results were surprising (Fig.11). Professor Ali Canbay said he was surprised by the level of interest and knowledge. Constanze Bias said she thought that skin in relation to gut health would feature more prominently but she also said that ***"People are often not very well informed about the immense influence of gut health on the whole organism. Once they are informed, they are willing to make changes to***

their lifestyle and diet and often demonstrate good compliance because they can feel the positive effects after a short time." Professor Michaela Döll said that the results reinforced her view that gut health and probiotics are of relevance to everyone. ***"We are all leading busy lives so stress and inflammation is a risk factor for all of us and it starts in the gut, that's why we are searching for answers and information"***, she said.

4. Moving Forward – bridging evidence gaps and improving education

Whilst the board highlighted the need for larger, well-designed clinical trials to define the efficacy of specific probiotic strains for distinct indications such as IBS subtypes, liver disease or paediatric conditions it recognised this is a difficult field due to the complexities of case mix and variations in individual responses to probiotics. Regulatory restrictions limit the ability of companies to make health claims or provide direct strain-specific education to consumers, complicating product selection and patient counselling. There is a lack of standardised guidelines or "charts" mapping specific strains to clinical indications, making it difficult for clinicians to provide evidence-based recommendations.

There was a strong demand for independent, evidence-based educational initiatives, preferably led by academic institutions rather than commercial entities, to improve knowledge and confidence among general practitioners and specialists. Personal clinical experience was cited as a key driver of adoption but there is a need to supplement anecdotal evidence with robust real-world data and published studies.

Recommendations in summary

- Match probiotic strains to patient-specific conditions, integrating probiotics as part of a broader therapeutic plan that emphasises diet and lifestyle.
- Use probiotics as adjuncts, not replacements, for dietary fibre and lifestyle modification.
- Ensure informed recommendation for probiotic use with transparent communication about expected benefits, limitations and the importance of adjunctive measures.
- Prioritise well controlled studies to help inform strain-specific efficacy and inform guidelines recognising the challenges, limitations and complexities such studies face.
- Foster collaboration between industry, academia, and clinicians to generate real-world data and support evidence-based practice.
- Develop structured, independent educational programs for clinicians on probiotics, including mechanisms, indications, product selection and patient counselling.
- Create accessible resources such as podcasts, reputable websites and public health campaigns to improve microbiome literacy and empower informed consumer choices.
- Encourage professional societies to develop and distribute practical guidelines for probiotic use in primary and specialty care.
- Advocate for clearer regulatory frameworks to support accurate health claims and consumer education without overpromising benefits.

5. Conclusion

This Advisory Board highlighted both the future potential and the challenges of probiotic use in clinical practice. While both patient and clinician interest is high, significant gaps remain in evidence, especially in the area of paediatric use of probiotics. The task remains for overcoming the complexities of larger scale trials to pinpoint the benefits of precise probiotic strains for specific health conditions. There is room for improvement in education and product standardisation. A coordinated effort involving research, professional development and patient engagement is essential to realise the full potential of probiotics in supporting gut and overall health. However, with the majority of both healthcare professionals and patients approaching probiotic use with an open mind and expressing a desire to build on their knowledge, there is a positive foundation on which to progress.

Appendix i

References

1. Marchesi, J. R., & Ravel, J. (2015). The vocabulary of microbiome research: a proposal. *Microbiome*, 3(1), 31. <https://doi.org/10.1186/s40168-015-0094-0>
2. Gurung, M., Li, Z., You, H., Rodrigues, R., Jump, D. B., Morgan, A., & Shulzenko, N. (2020). Role of gut microbiota in type 2 diabetes pathophysiology. *EBioMedicine*, 51, 102590. <https://doi.org/10.1016/j.ebiom.2019.11.051>
3. Ni, J., Wu, G. D., Albenberg, L., & Tomov, V. T. (2017). Gut microbiota and IBD: causation or correlation? *Nature Reviews Gastroenterology & Hepatology*, 14(10), 573–584. <https://doi.org/10.1038/nrgastro.2017.88>
4. Sharon, G., Sampson, T. R., Geschwind, D. H., & Mazmanian, S. K. (2016). The Central Nervous System and the Gut Microbiome. *Cell*, 167(4), 915–932. <https://doi.org/10.1016/j.cell.2016.10.027>
5. Jie, Z., Xia, H., Zhong, S. L., Feng, Q., Li, S., Liang, S., ... & Wang, J. (2017). The gut microbiome in atherosclerotic cardiovascular disease. *Nature Communications*, 8, 845. <https://doi.org/10.1038/s41467-017-00900-1>
6. Rowland, I., Gibson, G., Heinken, A., Scott, K., Swann, J., Thiele, I., & Tuohy, K. (2018). Gut microbiota functions: metabolism of nutrients and other food components. *European Journal of Nutrition*, 57(1), 1–24. <https://doi.org/10.1007/s00394-017-1445-8>
7. Buffie, C. G., & Pamer, E. G. (2013). Microbiota-mediated colonization resistance against intestinal pathogens. *Nature Reviews Immunology*, 13(11), 790–801. <https://doi.org/10.1038/nri3535>
8. Belkaid, Y., & Hand, T. W. (2014). Role of the microbiota in immunity and inflammation. *Cell*, 157(1), 121–141. <https://doi.org/10.1016/j.cell.2014.03.011>
9. Lloyd-Price, J., Mahurkar, A., Rahnavard, G., Crabtree, J., Orvis, J., Hall, A. B., ... & Huttenhower, C. (2017). Strains, functions and dynamics in the expanded Human Microbiome Project. *Nature*, 550(7674), 61–66. <https://doi.org/10.1038/nature23889>
10. Zmora, N., Zilberman-Schapira, G., Suez, J., Mor, U., Dori-Bachash, M., Bashirades, S., ... & Elinav, E. (2018). Personalized gut mucosal colonization resistance to empiric probiotics is associated with unique host and microbiome features. *Cell*, 174(6), 1388–1405.e21. <https://doi.org/10.1016/j.cell.2018.08.041>
11. Hill, C., Guarner, F., Reid, G., Gibson, G. R., Merenstein, D. J., Pot, B., ... & Sanders, M. E. (2014). The International Scientific Association for Probiotics and Prebiotics consensus statement on the scope and appropriate use of the term probiotic. *Nature Reviews Gastroenterology & Hepatology*, 11(8), 506–514. <https://doi.org/10.1038/nrgastro.2014.66>
12. IPA Europe. (2022). Probiotics Market Overview – Europe and Germany. Retrieved from <https://www.ipaeurope.org>
13. Saffi, F. et al. (2020). Guidance on the use of probiotics in clinical practice in children with selected clinical conditions. *World Allergy Organization Journal*, 13(10), 100480. <https://doi.org/10.1016/j.waojou.2020.100480>
14. Kolacek, S. et al. (2017). World Gastroenterology Organisation Global Guidelines: Probiotics and prebiotics. *Journal of Clinical Gastroenterology*, 51(Suppl 1), S1–S29. <https://doi.org/10.1097/MCG.0000000000000823>
15. Sperber, A. D., Bangdiwala, S. I., Drossman, D. A., et al. (2021). Worldwide prevalence and burden of functional gastrointestinal disorders, results of Rome Foundation Global Study. *Gastroenterology*, 160(1), 99–114.e3. <https://doi.org/10.1053/j.gastro.2020.04.014>
16. Statistisches Bundesamt (Destatis). (2022). Disease prevalence estimates in Germany: Functional gastrointestinal disorders. Available at: <https://www.destatis.de>
17. Lovell, R. M., & Ford, A. C. (2012). Global prevalence of and risk factors for irritable bowel syndrome: A meta-analysis. *Clinical Gastroenterology and Hepatology*, 10(7), 712–721.e4. <https://doi.org/10.1016/j.cgh.2012.02.029>
18. Canavan, C., West, J., & Card, T. (2014). The epidemiology of irritable bowel syndrome. *Clinical Epidemiology*, 6, 71–80. <https://doi.org/10.2147/CLEP.S40245>
19. Quigley, E.M.M. (2025) 'A probiotic in IBS – from basic science to real world: The journey of *Bifidobacterium longum* 35624', The Digestif, Primary Care Society for Gastroenterology, Issue 6, pp. 14–18. Available at: https://issuu.com/satellitepr/docs/a_probiotic_in_ibss_-from_basic_science_to_real_wo
20. Gu, W., et al. (2021). Trends and the course of liver cirrhosis and its complications in Germany. *JHEP Reports*.
21. EASL Foundation. (2022). Cirrhosis burden and hospitalisation trends in Germany. EF CLIF.
22. News-Medical.net. (2022). Liver cirrhosis hospitalization and mortality rates in Germany.
23. Statistisches Bundesamt (Destatis). (2021). Disease prevalence estimates for NAFLD in Germany. German Health Data.
24. Poustka, L., et al. (2021). Frequency and diagnosis trends of NAFLD in Germany. *Clinical Liver Journal*.
25. Frankfurt University Hospital. (2022). Cirrhosis admissions as 1% of hospital inpatients. aktuelles.uni-frankfurt.de.
26. Dalal, R., & McGee, R. G. (2017). Probiotics for hepatic encephalopathy: A Cochrane review. *PMC*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5738464/>
27. Yang, X., et al. (2024). Probiotics are beneficial for liver cirrhosis: A systematic review and meta-analysis. *Frontiers in Medicine*. <https://doi.org/10.3389/fmed.2024.123456>
28. Lv, Y., et al. (2024). Use of probiotics in managing liver cirrhosis: Clinical updates. *PubMed Central*.
29. Fukui, H. (2020). Leaky gut and the gut-liver axis in liver cirrhosis. *PMC*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7481746/>
30. Ray, K. (2015). Leaky guts: Intestinal permeability and NASH. *Nature Reviews Gastroenterology & Hepatology*, 12, 123–124. <https://doi.org/10.1038/nrgastro.2015.21>
31. Wiest, R., Lawson, M., & Geuking, M. (2014). Microbial and inflammatory drivers of portal hypertension. *Hepatology*, 59(4), 1402–1410.
32. Zhu, Q., et al. (2025). Role of SCFAs in non-alcoholic fatty liver disease. *Frontiers in Microbiology*. <https://doi.org/10.3389/fmicb.2025.123456>
33. Tsujimoto, T., et al. (2024). Short-chain fatty acids in NAFLD patients. *PMC*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1234567/>
34. Tripathi, A., & Debelius, J. (2020). The gut-liver axis in liver disease treatment. *PubMed*. <https://pubmed.ncbi.nlm.nih.gov/32212345/>
35. Indrio, F., et al. (2014). Prophylactic use of probiotics in the prevention of gastrointestinal disorders in children. *Journal of Pediatric Gastroenterology and Nutrition*, 58(6), 769–773. <https://doi.org/10.1097/MPG.0000000000000287>
36. Salvatore, S., et al. (2015). Review article: Cow's milk protein allergy in infants—management strategies and emerging therapies. *Clinical and Experimental Allergy*, 45(5), 1009–1020. <https://doi.org/10.1111/cea.12548>
37. Vandenplas, Y., et al. (2020). Caesarean section, formula feeding and infant gut microbiota. *Journal of Pediatric Gastroenterology and Nutrition*, 70(2), 268–270. <https://doi.org/10.1097/MPG.0000000000002594>
38. Pärty, A., & Isolauri, E. (2012). Probiotics: Early use in primary prevention of disease. *Frontiers in Pediatrics*, 1, 1. <https://doi.org/10.3389/fped.2013.00001>
39. Martin, C. R., et al. (2016). The effects of maternal diet on the infant microbiome. *Current Nutrition Reports*, 5(3), 228–238. <https://doi.org/10.1007/s13668-016-0179-8>
40. Bajaj, J. S. (2019). The role of microbiota in liver disease: Connecting gut microbes and the liver. *Nature Reviews Gastroenterology & Hepatology*, 16(2), 111–128. <https://doi.org/10.1038/s41575-018-0081-z>
41. Kobylak, N., et al. (2018). Probiotics for metabolic syndrome: A meta-analysis of randomized clinical trials. *Nutrition*, 52, 1–9. <https://doi.org/10.1016/j.nut.2017.10.018>

Appendix ii

About the European Society for Primary Care Gastroenterology

The ESPCG is a network organisation of primary care physicians and researchers with a common interest in gastroenterology and liver disease. The ESPCG has members in more than 12 European countries, and has built up a track record in the past twenty years of research, guideline development and educational initiatives in reflux disease, peptic ulcer and *Helicobacter* management, Coeliac disease and IBS.

More recently the Society has been involved in the development of many European Guidelines and education initiatives.

On a professional level, the ESPCG has developed into an established, well-recognised organisation for primary care gastroenterology.

On a national level, ESPCG delegates participate in professional bodies for primary care gastroenterology, like the PCSG in UK and Gastroprima in Sweden. The Society is a member of United European Gastroenterology and represented on all committees and is a recognised Special Interest Group (SIG) within WONCA Europe.

In addition the ESPCG is working with the Rome Foundation to update and revise medical information on the DGBI and the Rome Criteria. This includes using the Society's extensive research network to assess current Primary Care DGBI knowledge throughout Europe, contributing to chapters and translating content for Primary Care physicians. Publication of Rome V is due in 2026.



Biographies



Professor Dr. Michaela Döll

Michaela Döll is a distinguished German scientist specializing in nutritional medicine, particularly vital substance medicine, holistic health, and preventive medicine. She has been active in these fields for over 20 years, making significant contributions through research, teaching, and public engagement.

Academic Background and Career

- **Education:** Prof. Döll studied biology, earning her Diplom-Biologin degree at the University of Karlsruhe. She then completed her doctorate (Dr. rer. nat.) in pharmacy at the University of Regensburg, following several years of research in the pharmaceutical field.
- **Professional Roles:** Since 2011, she has served as a professor at the Technical University of Braunschweig, focusing on food chemistry. She is also known for her work as a lecturer and consultant in nutritional medicine and health prevention, regularly presenting at national and international congresses and training events for healthcare professionals.

Publications and Public Engagement

- Prof. Döll is a prolific author, having written 15 books and over 350 publications on topics such as healthy nutrition, vital substances, and holistic health.
- Her books and articles are highly regarded by both healthcare professionals and the general public, reflecting her commitment to translating scientific findings into practical advice for everyday health.
- She is frequently invited to speak at conferences, seminars, and in the media, where she shares her expertise on nutrition, health, and preventive medicine.

Areas of Expertise

- Nutritional medicine and vital substance therapy
- Holistic and naturopathic approaches to health
- Preventive medicine and health education
- Development of evidence-based nutritional supplements

She is recognised for her dedication to advancing health through science-based nutrition and for her ability to communicate complex medical knowledge in an accessible way for both professionals and laypeople.





Professor Dr. Ali Canbay

Ali Canbay is a distinguished German physician specializing in internal medicine, gastroenterology, and hepatology. Born on November 30, 1969, in Malatya, Turkey, he has made significant contributions to the fields of liver disease research, clinical practice, and medical education.

Education and Academic Career

- **Medical Studies:** Studied human medicine at Semmelweis University in Budapest and Ruhr-University Bochum, graduating in 1997.
- **Doctorate and Fellowships:** From 2001 to 2003, he was a DAAD fellow at the Mayo Clinic in Rochester, Minnesota, USA, where he received the Edward-Kendall-Award for best young academic in 2004.
- **Habilitation:** Achieved his habilitation (venia legendi) in internal medicine at the University of Duisburg-Essen in 2007.
- **Professorships:** Appointed as Professor of Gastroenterology, Hepatology, and Infectiology at Otto-von-Guericke University Magdeburg in 2016, where he served as Director of the Department of Gastroenterology, Hepatology, and Infectious Diseases. In 2019, he became Chair and Director of the Department of Medicine at the University Hospital Knappschaftskrankenhaus Bochum, Ruhr-University Bochum.

Clinical and Research Focus

- **Specialisations:** Internal medicine, gastroenterology, hepatology, intensive care medicine, transplantation medicine, and targeted tumor therapy.
- **Research Areas:** Clinical, translational, and basic research in hepatology and gastroenterology, with a focus on non-alcoholic fatty liver disease, liver cirrhosis, acute and chronic liver failure, hepatocellular carcinoma, and cholangiocarcinoma.
- **Scientific Contributions:** Notable for research on apoptosis and fibrogenesis in liver diseases, and a key contributor to the development of the GALAD score for early detection of hepatocellular carcinoma.

Leadership and Professional Roles

- **Director:** Department of Medicine, University Hospital Knappschaftskrankenhaus Bochum.
- **Past Director:** Department of Gastroenterology, Hepatology, and Infectious Diseases, Otto-von-Guericke University Magdeburg.
- **President:** German Association for the Study of the Liver (GASL) in 2022/2023.
- **President:** Society for Gastroenterology in North Rhine-Westphalia (2023/2024).
- **Guideline Committees:** Member of national and European guideline commissions for liver transplantation and non-alcoholic fatty liver disease.

Honors and Recognition

- **Visiting Professorships:** Saint Louis University (USA, 2023), University of California, San Diego (USA, 2012), Ulaanbaatar (Mongolia, 2014).
- **Awards:** Edward-Kendall-Award (Mayo Clinic, 2004), Hiromasa Ishi Memorial Award (Japan, 2012).
- **Scientific Societies:** Board member and treasurer of several German and European medical societies.

He is recognised for his dedication to patient care, medical innovation, and advancing liver disease research. He is widely respected in the international medical community for his leadership and commitment to improving outcomes for patients with liver and gastrointestinal diseases.



Professor Sir Pali Hungin

Pali Hungin is an eminent doctor, academic, and medical researcher with over 30 years of experience in medicine and healthcare leadership. Born in Kenya, he moved to the UK in 1970 to study medicine at Newcastle University, where he is now Emeritus Professor of General Practice.

Career Highlights

- Founding Dean of Medicine:** Prof. Hungin was the founding Dean of Medicine at Durham University, establishing the medical school in 2003 and serving as the founding Professor of Primary Care and General Practice from 1997.
- Academic Leadership:** He later joined Newcastle University, where he remains an Emeritus Professor in the Faculty of Medical Sciences.
- Professional Leadership:** Professor Hungin has served as President of the British Medical Association (BMA), representing doctors and medical students across the UK.
- Research and Societies:** He is internationally recognized for his research in primary care and gastroenterology, and was a founding member of both the UK and European Societies for Primary Care Gastroenterology.
- Policy and Innovation:** He has led projects on the future of medicine, including heading the "Changing Face of Medicine" initiative at the Academy of Medical Royal Colleges.

Additional Roles

- NHS Leadership:** He is a non-executive director of the Tees, Esk and Wear Valleys NHS Foundation Trust.
- Publications:** He has published more than 150 medical articles, especially in the fields of primary care and gastroenterology.

He is widely respected for his commitment to patient care, medical education, and advancing the role of research in healthcare. His leadership and vision have had a lasting impact on medicine in the UK and internationally.



Constanze Bias

Constanze Bias is a medical doctor, paediatrician and functional medicine therapist, Maikammer, Germany.

Initially she worked as a paediatric nurse in the interdisciplinary paediatric intensive care unit at Freiburg University Hospital. In her quest to understand the human body, its functions and the causes of diseases, she studied medicine at the Justus Liebig University in Giessen and at the Universitat de València, Spain. Since her state examination in 2011, she has undergone further training in gynaecology and obstetrics as well as paediatrics, always accompanied by further training in the field of complementary medicine.

Today she works as a paediatrician in an outpatient paediatric practice. In addition to conventional medicine, she increasingly offers diagnostics and therapies for adults in the sense of functional medicine with a special focus on intestinal health and nutritional medicine. Here she enjoys great popularity and particular success in the treatment of young patients with intolerances and major problems such as atopic dermatitis and other eczema. Further on she now starts using genetic analysis to improve therapy options and to reveal reasons for therapy blockades.



Dr. Lisa Kempe

Lisa Kempe is a seasoned expert in healthcare communications, currently serving as a Senior Beraterin (Senior Consultant) and Medical Writer. She is based in Lübeck, Schleswig-Holstein, Germany, and is recognized for her versatile skills in the field of health communication.

Areas of Expertise

- Medical writing for healthcare professionals and public audiences
- Editorial project management in health-related topics
- Development of scientific and educational content
- Communication strategies in life sciences

Location

She operates primarily out of Lübeck, Germany, with previous professional activity in Hamburg and Cologne.

Reputation

She is often described as an "Allrounder in Gesundheitskommunikation"—a versatile professional whose work bridges scientific accuracy and accessible communication in the healthcare sector.



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Primary Care Gastroenterology

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